AMP SUPPLY CO.

LK 400/500 SERIES
LINEAR AMPLIFIERS

OWNER'S MANUAL

Amp Supply Co.
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Raleigh, NC 27607

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SECTION 1
INTRODUCTION

1.1 Product Description

The Amp Supply LK 400/500 series linear power amplifiers are compact 160-15 meter MF/HF amplifiers of modern design. The series provides the amateur operator with a choice of power output levels and features consistent with their specific operating requirements. Each LK 400/500 series amplifier uses the powerful 3-500Z triode tube(s) in a grounded grid configuration Class AB_2. The LK 400/500 series amplifiers are high performance pieces of equipment and are engineered conservatively with American components and ingenuity.

Every LK 400/500 series MF/HF linear amplifier is field tested at its specified power input level and duty cycle and should require a minimum of maintenance through years of operation. Additionally, each LK 400/500 series amplifier will operate many MARS frequencies without modification (see MARS expanded coverage chart). A quiet, efficient cooling system maintains the RF deck and power supply chamber temperature ensuring long service life. All LK 500 series linear amplifiers feature the new ALO (Automatic Lock Out) circuit which senses unacceptable plate/grid currents and voltages or improper amplifier tuning and stops amplifier operation.

Tuning the amplifier is a simple procedure, since each unit is designed for long-term stability in virtually any operating situation. Tuned input and standard relay switching circuitry makes the LK 400/500 series compatible with any available solid state or tube transceiver or transmitter. Despite their straight-forward design and minimal user required adjustment, the LK 400/500 series linear amplifiers are sophisticated electronic instruments. Therefore, if the unit is operated outside the parameters outlined in this owner's manual, damage may result. Please read this manual carefully before putting your new Amp Supply LK 400/500 series linear amplifier on the air.

The following definitions are applicable to this manual. These definitions must be followed explicitly. See Appendix A for a complete list of cautions and warnings.

WARNING
HAZARD PRESENTS PERSONAL INJURY OR DEATH

CAUTION
EQUIPMENT DAMAGE MAY OCCUR BUT NOT PERSONAL INJURY

NOTE
Proper performance of the amplifier cannot be ensured if disregarded

1.2 Specifications

The following subsections describe the LK 400/500 series amplifiers specifications.

1.2.1 Common Specifications

Physical dimensions and functional characteristics of the LK 400/500 series amplifiers are contained in this listing. Specifications are subject to change without notice or obligation.

DIMENSIONS:	9" H x 15" W x 15" D
FREQUENCY COVERAGE:	Ham Bands 160 through 15 meters*. Non-amateur frequencies between 1.8-4.0 and 6.5-24 MHz may be covered by adjustment made by a qualified electronics technician.
CIRCUIT TYPE:	Class AB$_2$ grounded grid.
EMISSION TYPES:	RTTY, SSTV, AM, CW, SSB
INPUT IMPEDANCE:	50 Ohms - tuned input for each band

OUTPUT IMPEDANCE:	Adjustable PI-network matches 50 ohm load with SWR not to exceed 2:1
INTERMODULATION DISTORTION PRODUCTS:	In excess of -33 dB below fundamental
HARMONIC SURPRESSION:	In excess of -50 dB below fundamental
FREQUENCY OPTIONS:	See Appendix A for MARS expanded frequency coverage
AVAILABLE OPTIONS:	- AT 3000 matching 3KW tuner - Ten meter mod kit for licensed U.S. Amateurs - Export model, factory built 10 meter board - Plug and Play Cable (specify your radio) - LK500 series only: - no QSK - no-tune version - PAC-5: Utilizing a Peter Dahl 1.75 AMP CCS Hypersil transformer which allows continuous duty, all modes, allows 24 hours a day operation (standard with LK 550). - LK 450: ALO circuit

1.2.2 Unique Specifications

LK450

TUBE COMPLEMENT:	(1) 3-500Z Triode
TYPICAL OUTPUT:	1000 Watts SSB, 800 Watts CW, 600 Watts SSTV, RTTY and 300 Watts AM
PLATE VOLTAGE:	RTTY, SSTV, AM, CW, SSB, 3.2 KV DC no load
DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	85 Watts PEP SSB 80 Watts CW, 50 Watts SSTV RTTY
DUTY CYCLE:	Amateur continuous duty on all modes at specified output
POWER REQUIREMENTS:	117 Volts 50/60 Hz @ 20 Amps or 234 Volts 50/60 Hz @ 10 Amps, unit factory wired for 117V
WEIGHT:	Shipping Net 46 lbs ; operating net 41 lbs Shipped in two boxes

LK500 Series

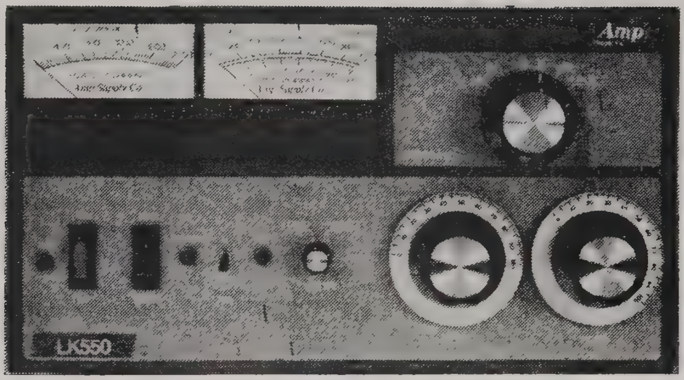
TUBE COMPLEMENT:	(2) 3-500Z Triodes
TYPICAL OUTPUT:	1500 Watts on SSB, 1200 Watts on CW and 900 Watts on SSTV, RTTY and 600 Watts AM
PLATE VOLTAGE:	RTTY, SSTV AM, CW, SSB 3.2 KV DC no load
DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	100 Watts PEP SSB 100 Watts CW, 60 Watts SSTV, RTTY
DUTY CYCLE:	Amateur continuous duty in all modes at specified output.

POWER REQUIREMENT:	117 Volts 50/60 25 Amps or 234 Volts 50/60 Hz 12.5 Amps
WEIGHT:	Shipping net 59 lbs, 2 boxes; operating net 54 lbs
AUTOMATIC LOCK OUT:	Safely interrupts amplifier operation when unacceptable antenna currents and/or voltages are encountered, or when the amplifier is improperly tuned
POWER TRANSFORMER:	1.2 Amp ICAS Peter Dahl Hypersil.

LK550 Series

TUBE COMPLEMENT:	(3) 3-500Z triodes
TYPICAL OUTPUT:	1500 Watts SSB, CW, SSTV, RTTY, 900 Watts AM
PLATE VOLTAGE:	RTTY, SSTV, AM, CW, SSB 3.2 KV DC no load
DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	100 Watts all modes
DUTY CYCLE:	Continuous duty all modes at specified output, 24 hours a day
POWER REQUIREMENTS:	234 Volts 50/60 Hz 25 Amps only
WEIGHT:	Shipping Net 110 lbs; 3 boxes Operating Net 103 lbs; RF Deck 38 lbs; transformer 65 lbs; tubes 7 lbs.
AUTOMATIC LOCK OUT:	Safely interrupts amplifier operation when unacceptable antenna currents and/or voltages are encountered, or when the amplifier is improperly tuned.
POWER TRANSFORMER:	1.75 Amp CCS Peter Dahl Hypersil in separate enclosure.

1.3 Front Panel Features



AC-ON Illuminated ROCKER SWITCH - Turns power on and off.

XMIT-STBY ROCKER SWITCH - Turns the amp from Standby to Operate mode. Operate mode enables a green LED.

BAND-SWITCH - Selects desired band.

HI/LO AIR SWITCH - Provides higher volume cooling air for extended operation.

XMIT - Red LED

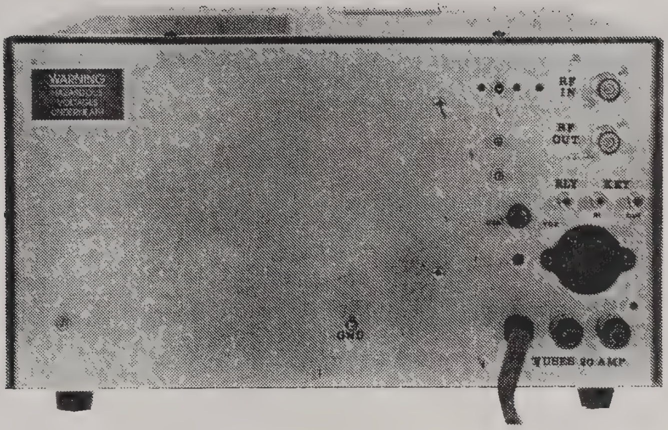
PLATE AND LOAD KNOBS - Tuning adjusts Pi-Network capacitors in tank circuit for proper resonance and loading on all bands.

PLATE CURRENT METER - Continuously monitors plate current of 3-500Z tube(s).

GRID-VOLT METER - By use of the meter switch can monitor plate volts (0-3500 V) or grid current (0-350 mA).

ALO LED - Enabled when unacceptable plate/grid currents and/or voltages are encountered or improper amplifier tuning exists .

1.4 Rear Apron Features



RF-IN - For connecting to exciter RF output to the amplifier.

RF-OUT - For connecting the LK400/500 series linear amplifier to an antenna.

RLY - For connecting to exciter auxiliary jack to activate T/R Relay in the LK400/500 series amplifiers.

KEY IN - QSK ONLY - station key, must be a bug, hand key or a keyer

KEY OUT - QSK ONLY - hooks to the KEY-IN jack on a QSK transceiver.

QSK VOX SWITCH - place in the QSK position when operating QSK CW.

GROUND LUG - Attach to a good earth ground.

FUSES - 2 holders provided to protect each leg of the AC line.

SERIAL NUMBER - Located on the model type identification sticker.

AC LINE CORD - Connect to proper power requirements only.

PAC-5 PLUG - LK550/LK500 w/optional PAC-5 only. Connects the PAC-5 power transformer to LK550/LK500.

CAUTION

NEVER REMOVE /INSERT PLUG WHEN UNIT IS ON OR WHEN THE RF DECK AC LINE CORD IS CONNECTED TO AN AC POWER SOURCE

SECTION 2
INSTALLATION

2.1 Introduction

This section describes the unpacking and installation procedures for the LK 400/500 series amplifiers.

WARNING

MAKE NO ATTEMPT TO PUT THE AMPLIFIER IN SERVICE OUTSIDE OF THE CABINET—CONTACT WITH VOLTAGE IN THE AMPLIFIER CAN BE FATAL!!!

2.2 Unpacking

All shipping containers have been specially designed to protect their contents and special care has been taken to prevent damage under normal shipping conditions. Mishandling should be evident upon inspection of the shipping container. If damage is found after visual inspection, take care not to destroy the evidence. If necessary, document the damage with photographs and contact the transport carrier immediately.

Carefully remove your new LK400/500 series linear amplifier from its packing carton, and examine it closely for signs of shipping damage. It is recommended to save all original packing cartons to protect your amplifier from damage should you wish to store it or ship it for after-sales service.

2.3 Warranty Card

Fill out the enclosed warranty registration card and return to Amp Supply within 10 days of original purchase. Keep your original sales slip with the packing cartons should you ever need it for reference.

2.4 Installation

The following subsections describe the installation procedures for the LK 400/500 series amplifiers.

2.4.1 Tube Installation

CAUTION

ENSURE TUBES ARE INSTALLED PRIOR TO
APPLYING POWER TO THE AMPLIFIER

Carefully remove the tubes from their boxes. Carefully move the parasitic chokes in the tube compartment out of the way and install tubes. When securing the plate cap(s), take care not to overtighten screws or tube(s) may be damaged. Remove packing from under the tuned input board.

2.5 Amplifier Placement

In general, the location of your new amplifier is not critical. However, certain precautions must be taken to ensure optimum performance. Avoid extremely hot locations such as near radiators or other heating units. Keep the top of the amplifier case clear of books, papers, or other equipment to protect against overheating. Do not place the amplifiers closer than 2-1/2 inches from a wall.

CAUTION

OBSTRUCTION OF THE SIDES OF THE AMPLIFIER CASE
AND THE BLOWER AIR INLET MAY RESULT IN
AMPLIFIER TUBE(S) OVERHEATING

2.6 Power Requirements

Refer to your amplifier series unique specifications for proper power requirements and Figure 2.6.1 for AC line hook-up.

WARNING

NEVER OPERATE ANY AMPLIFIER
USING AN EXTENSION CORD

The LK400/500 series is shipped from the factory with jumpers connected to operate on 234 VAC (except LK 450). It is highly recommended that your

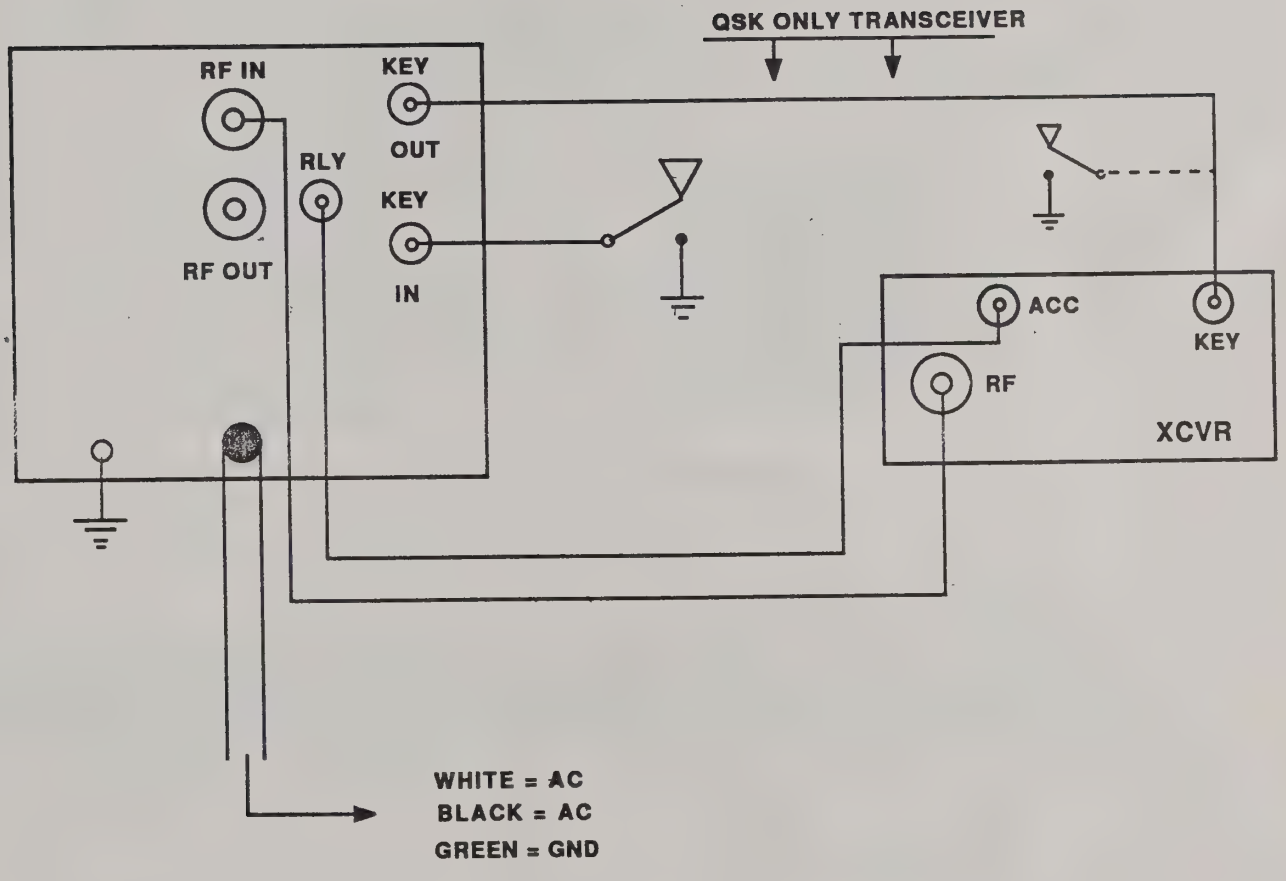


FIGURE 2.6.1 AC Line Hook-Up

amplifier be operated from its own 234 V - 20 A (or greater) circuit. If a 117 V circuit is all that is available, it should be fused for 30 A with circuit conductors not less than #10. No other equipment should be operated from this 117V circuit. A jumper plug is provided with the amplifier to convert to 117V service.

WARNING

COMPLETELY REMOVE POWER FROM YOUR AMPLIFIER
AND ALLOW 30 MINUTES FOR THE HIGH VOLTAGE CAPACITORS
TO DISCHARGE THROUGH BLEEDER RESISTORS
BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS
ON BACK OF AMPLIFIER.

Figures 2.6.2 illustrates the jumper connection on the Power Distribution Board, located in the left rear corner of the chassis, for either 117V and 234V operation. The jumper must be inserted as shown or severe damage to your amplifier components may result. Remove existing jumper before installing the new one.

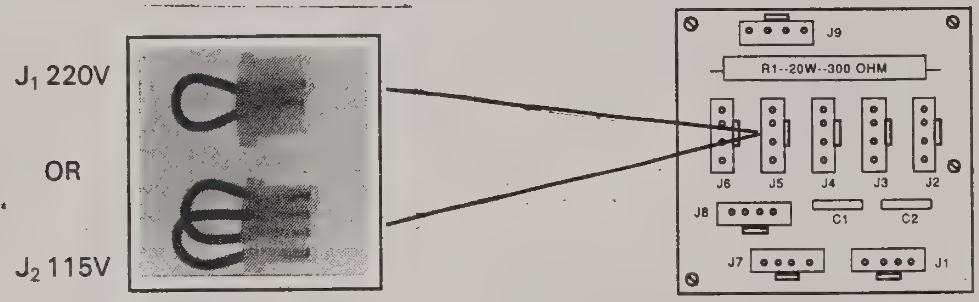


Figure 2.6.2 Jumper Plug Placement

2.7 Amplifier Installation

After the tubes have been installed, install the top cover and secure with a few screws to finger tight. Connect your amplifier to your power source. Set the amplifier controls as follows:

AC/ON - OFF
XMIT/STBY - STBY
METER - VOLTS

Turn the unit on. Plate voltage should read between 3000-3300 Volts DC. Turn the unit off.

2.8 Cable Installation (See Figure 2.8.1)

a. Using a 6 ft. length, connect a 52-Ohm coaxial cable (RG-8U or equivalent) between your transmitter's RF OUTPUT to the LK400/500 series RF INPUT connector.

b. Using another short length of coaxial cable, (RG-8U or equivalent,) connect the LK400/500 series RF OUTPUT connector to a suitable wattmeter.

c. Using the necessary length of coaxial cable, (RG-8U or equivalent) connect the wattmeter output to your antenna system.

d. Select an appropriate length of shielded cable and install an RCA connector on one end and the appropriate connector for your transceiver at the other end.

e. Install the shielded cable between your transmitter accessory contacts on the transmitter rear apron and the RLY plug on the rear apron of your LK400/500 series linear amplifier. These should be normally open contacts capable of carrying 100 mA, which close when you desire to transmit.

f. See your exciter operators manual for details.

2.9 Ground Requirements

For best results your amplifier should be attached to a good earth ground by as short in length, and as large as possible, ground strap. A ground post is provided on the rear apron for this purpose. It is always a good idea to connect the chassis of all associated equipment together and ground them at one point to avoid ground loops. We recommend that all of the equipment in your station be connected together and grounded at the antenna tuner.

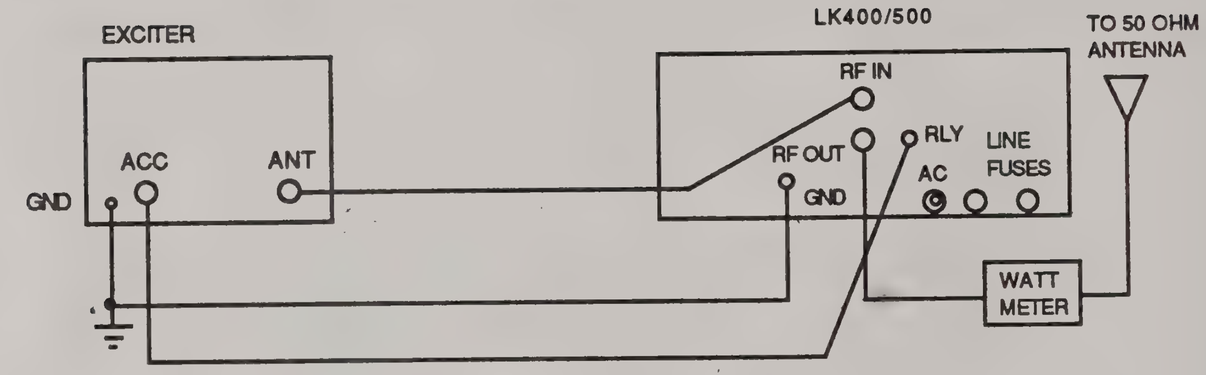


Figure 2.8.1 Cable Installation

NOTE

If QSK is available and desired, refer to Figure 2.6.1
to connect the cables. Make cables as specified in
step 2.8d Cable Installation.

2.10 Antenna Requirements

Your LK400/500 series linear amplifier has been designed for use with antennas resonant at the operating frequency and having approximate impedances within the limits of 30 to 75 Ohms.

The nominal output impedance of the amplifier is 50 Ohms and the SWR of this load should never exceed 2:1. Although there are many types of antennas which will meet these requirements, the simplest is a one-half (1/2) wave dipole center fed with 52 Ohm coax. For a detailed discussion on antennas, we suggest referring to an appropriate antenna book.

Most practical antennas exhibit an SWR range exceeding 2:1 at the edge of your favorite Amateur band. For this reason we recommend using an antenna matching network which will allow your LK400/500 series linear amplifier to work into a 50 Ohm resistive load for maximum power transfer into the antenna. The new AT3000 by Amp Supply Co. is a perfect companion tuner for the LK400/500 series of amplifiers.

CAUTION

NEVER ATTEMPT TO OPERATE THE LK400/500 SERIES WITHOUT
FIRST CONNECTING THE UNIT TO AN ANTENNA OR 50 OHM
DUMMY LOAD OF SUFFICIENT POWER HANDLING CAPACITY OR
SERIOUS DAMAGE MAY RESULT

This completes installation of your new LK400/500 series linear amplifier.

SECTION 3
TUNING

3.1 Tuning Procedure

This section describes the tuning procedure for the LK400/500 series linear amplifiers. Follow all steps carefully to insure optimum performance of your amplifier. Read all tuning steps before actually tuning your amplifier.

CAUTION

THIS UNIT IS SHIPPED READY FOR 234 VAC OPERATION (EXCEPT LK450).
REFER TO INSTALLATION INSTRUCTIONS FOR 117V OPERATION.

1. Set the BANDSWITCH to the desired band. If your amplifier is model LK450/500/550NTC, go to step 4, otherwise proceed on to step 2.

2. Set the LOAD control on number shown on tuning chart.

3. Set the TUNE control on number shown on tuning chart.

4. Set the ON/AC control to ON.

5. Select the correct antenna for the band selected. Insure antenna VSWR is acceptable before proceeding.

6. Set the XMIT/STBY control to XMIT. If your amplifier is model LK500NTC, go to step 7, otherwise proceed to step 8. The green LED indicates the amplifier is in the Ready To Operate mode.

7. Set Meter switch to grid current (this is read on Plate Voltage/Grid Current Meter).

8. Insert a small amount of exciter drive until the plate current begins to rise to approximately 400mA. If your amplifier is model LK450/500/550NTC, go to step 16, otherwise proceed to step 9.

9. Rotate the TUNE control for maximum output on your station watt meter.

10. Alternate between TUNE and LOAD for maximum output.
1 KW input (Plate Voltage x Plate Current = Power Input)
Example: Plate Current = 400mA
Plate Voltage = 2500 VDC
.4 x 2500 V = 1000 Watts Input

11. Increase drive power. Repeat steps 8 through 10 until you obtain maximum power output.

12. During tune up alternately monitor Grid and Plate Current.

13. Grid current can be reduced by slightly decreasing the Load control. Turn control to right, clockwise.

14. ALWAYS TUNE FOR MAXIMUM OUTPUT!

15. Increase drive from the exciter until a further increase in exciter drive does not increase amplifier output power.

16. When your station watt meter indicates maximum amplifier power output, return the exiter to receive mode. Select the desired transmitter operating mode and you are ready to operate with your new amp.

Table 3-1
Tuning Charts (see enclosed charts)

LK450	BAND	LOAD	TUNE
	160	X	X
	80	X	X
	40	X	X
	20	X	X
	15	X	X
	10	-	-

LK550	BAND	LOAD	TUNE
	160	65	68
	80	52	90
	40	58	31
	20	44	22
	15	32	9
	10	-	-

LK500	BAND	LOAD	TUNE
	160	X	X
	80	X	X
	40	X	X
	20	X	X
	15	X	X
	10	-	-

CAUTION

OBSERVE CURRENT LIMITATIONS FOR NORMAL OPERATION

Plate Current . . . .not to exceed 950 MA. in full tune-up*
Grid Current . . . . under tune up, RTTY, or SSTV, never to exceed 350 mA.
. . . . on SSB voice peaks should average less than 250 mA while operating.
. . . . on CW between 100 and 250 mA, depending on sending speed.**
* LK550 will not exceed 1400 mA
** LK550 will exceed 400 mA

TUNE-UP NOTES

SECTION 4
AMPLIFIER CARE

4.1 Introduction

This section provides instructions on the care and cleaning of the LK 400/500 series amplifiers.

WARNING

EXTREME CARE MUST BE TAKEN WHENEVER MAKING ANY ADJUSTMENTS INSIDE ANY LINEAR AMPLIFIER

4.2 Cleaning Amplifier Compartment

After completely disconnecting your amplifier from the power source, wait 30 minutes so all electrolytic capacitors have discharged through their bleeder resistors. The top cover can then be safely removed by taking out the top and side row of screws.

Since the amplifier compartment is forced-air cooled, it will collect particles of dust which must be periodically removed. The frequency of cleaning will be governed by how many hours the amplifier is operated, and by operating environment cleanliness. When the blower blade accumulates a large amount of dust, the amplifier should be cleaned. The best way to clean the amplifier is to remove the top cover and blow the dust out with compressed air. If compressed air is not available, a soft-bristled one-inch paint brush can be used to brush the amplifier clean.

CAUTION

DO NOT BLOW AIR DIRECTLY INTO THE FAN BLADES.
USE A BRUSH IN CLEANING THE BLADES OF THE FAN

4.3 Tube Replacement

If it becomes necessary to replace the tubes in the amplifier the same brand should be used. A new tube kit is available from Amp Supply Co.

Table 4-1
Mars Expanded Frequency Chart

FREQUENCY	BAND SELECT	PLATE	LOAD
7.500	7.0	38	39
8.033	7.0	30	30
11.539	14.0	47	95
12.050	14.0	42	86
13.644	14.0	29	61
13.485	14.0	30	61
13.827	14.0	28	58
13.975	14.0	28	55
14.385	14.0	24	53
14.443	14.0	24	53
14.820	14.0	22	42
14.935	14.0	21	46
16.300	21.0	42	70
20.680	21.0	19	45
20.937	21.0	18	43
20.998	21.0	18	43
27.963*	AUX	15	30
27.975*	AUX	15	29

*NOTE: With 10 meters installed.

4.4 TroubleShooting

Careful consideration has been given to the design of the LK400/500 series to keep maintenance problems to a minimum. However, it is possible that some problem will arise which cannot be cured by tube substitution. If this occurs, a chart of frequent problems and typical cures has been included. Please refer to Table 4-1, trouble shooting guide. After checking all suggested remedies without any success, we suggest that you contact our Customer Service Department, to describe your problem in detail. Include full information concerning external connections, control settings, antenna and associated equipment. Be sure to indicate the serial number of your amplifier as specified on the rear apron. Do not return equipment to the factory without prior authorization.

4.5 Factory Service

Obtain a return authorization from the Customer Service Department. Amp Supply Co. will assume no responsibility if the transportation company refuses to pay a damage claim due to improper packing or lack of insurance. Remove the tubes prior to shipping and store the tubes in a separate carton. Do not return the tubes.

Table 4-2
TROUBLE SHOOTING CHART

SYMPTOM	CAUSE	REMEDY
Amplifier will not power up	Not connected to a live AC circuit	Insure amplifier is plugged into a live, appropriate power source
	Blown AC line fuse	Remove Amplifier from AC power source and Inspect and replace blow fuse with an identical type fuse. Connect Amplifier to AC power source. If fuse fails again contact Amp Supply Co.
Amplifier will not transmit	Stand by/operate switch in standby	Place switch in XMIT position (green LED should light)
	Relay control cable has open connection	Check for continuity center to center, shield to shield. Replace cable as necessary Re-do RCA phono plugs
	Very high VSWR	Normal operation for ALO equipped amplifiers Stops amplifier operation when high antenna currents and voltages are encountered. Ensure a resonant antenna is selected for the frequency being used

Table 4-2
TROUBLE SHOOTING CHART(CONT'D)

SYMPTOM	CAUSE	REMEDY
Amplifier will not transmit	Improper tuning	Normal operation for ALO equipped amplifiers, the ALO stops amplifier operation when the amplifier is mistuned. Place exciter in receiver mode. Consult the Tuning Chart applicable to your model type and preset the Load and Tune controls as specified then tune the amplifier as directed in the tuning procedure
	RF input/output cables reversed	Refer to figure 2.8.1 for details
	QSK control lines incorrect	Refer to figure 2.6.1 for correct connection
	Low/No Drive	Transmitter has no output Wrong band selected on transmitter
	QSK/VOX switch in QSK position	Place QSK/VOX switch on the rear apron to VOX position
	Low power output	Wrong band selected on amplifier Check Tune and Load presets on tuning chart and reset if necessary One or more 3-500Z tubes weak or defective

Table 4-2
TROUBLE SHOOTING CHART(CONT'D)

SYMPTOM	CASE	REMEDY
Amplifier always in transmit mode	Relay Control cable is shorted	Check center to shield for continuity: Re-do Relay Control cable
Amp will not load		Check Bandswitch setting Wrong antenna selected XMIT/STBY switch in STBY

LIMITED WARRANTY

Amp Supply Company warrants to the original purchaser that this product shall be free from defects in material (except tubes and RF output transistors) or workmanship for two (2) years from the date of original purchase.

During the warranty period, the Amp Supply Company or an authorized Amp Supply Company service facility will provide free of charge both parts (except tubes and RF output transistors) and labor necessary to correct defects in material or workmanship.

To obtain such warranty service, the original purchaser must:

(1) Complete and send in the Warranty Registration Card.

(2) Notify Amp Supply Company or its nearest authorized service facility, as soon as possible after discovery of a possible defect, of:

(a) The model number and serial number, if any;
(b) The identity of the seller and the approximate date of purchase;
(c) A detailed description of the problem, including details on the electrical connection in associated equipment and the list of such equipment.

(3) Deliver the product to the Amp Supply Company or the nearest authorized service facility, or ship the same in its original container or equivalent, fully insured and shipping charges prepaid.

Correct maintenance, repair and use are important to obtain proper performance from this product. Therefore, carefully read the Instruction Manual. This warranty does not apply to any defect that Amp Supply Company determines is due to:

(1) Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and specifications of the original parts.

(2) Misuse, abuse, neglect or improper installation.

(3) Accidental or intentional damage. All implied warranties, if any, terminate one (1) year from the date of the original purchase.

The foregoing constitutes Amp Supply Company's entire obligation with respect to this product, and the original purchaser and any user or owner shall have no other claim for incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

This warranty gives specific legal rights and you may also have other rights which vary from state to state.

APPENDIX A
WARNINGS AND CAUTIONS

WARNINGS

MAKE NO ATTEMPT TO PUT THE AMPLIFIER IN SERVICE OUTSIDE OF THE CABINET. CONTACT WITH HIGH VOLTAGES FOUND IN THE AMPLIFIER CAN BE FATAL.

NEVER OPERATE ANY AMPLIFIER FROM AN EXTENSION CORD.

COMPLETELY REMOVE POWER FROM YOUR AMPLIFEIR AND ALLOW 30 MINUTES FOR THE HIGH VOLTAGE CAPACITORS TO DISCHARGE THROUGH BLEEDER RESISTORS BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS IN BACK OF AMPLIFIER.

CAUTIONS

NEVER REMOVE/INSERT PLUG WHEN UNIT IS ON OR WHEN THE RF DECK AC LINE CORD IS CONNECTED TO AN AC POWER SOURCE.

ENSURE TUBES ARE INSTALLED PRIOR TO APPLYING POWER TO THE AMPLIFIER.

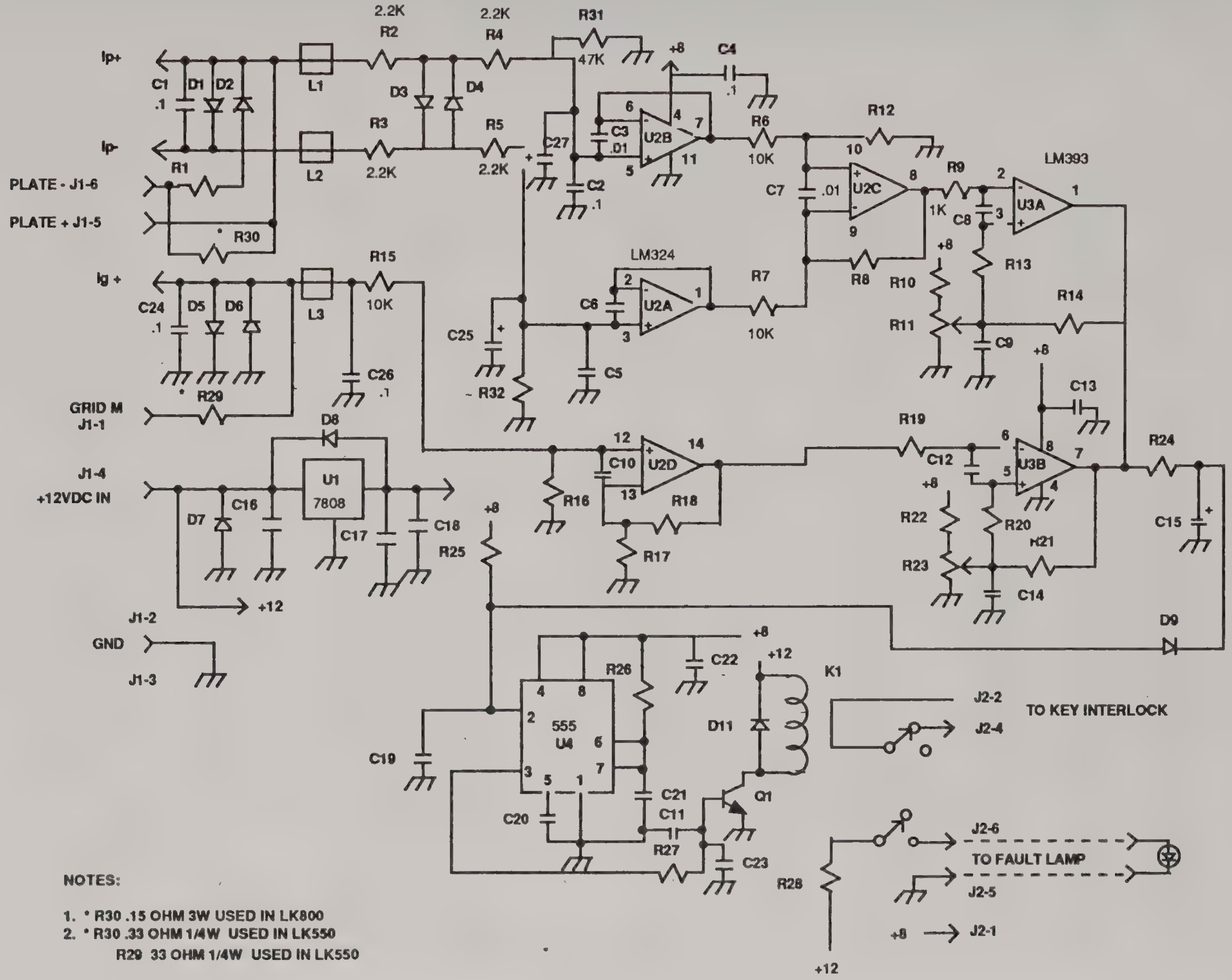
OBSTRUCTION OF THE SIDES OF THE AMPLIFIER/CASE AND THE BLOWER AIR INLET MAY RESULT IN AMPLIFIER TUBE(S) OVERHEATING.

THE UNIT IS SHIPPED READY FOR 234VAC OPERATION. REFER TO INSTALLATION INSTRUCTIONS FOR 117V OPERATION.

OBSERVE CURRENT LIMITATIONS FOR NORMAL OPERATION.

DO NOT BLOW AIR DIRECTLY INTO FAN BLADES. USE A BRUSH FOR CLEANING THE BLADES.

APPENDIX B
SCHEMATIC DIAGRAMS



NOTES:

1. * R30 .15 OHM 3W USED IN LK800
2. * R30 .33 OHM 1/4W USED IN LK550
   R29 33 OHM 1/4W USED IN LK550

FIGURE B-1 ALO METER BOARD

ALO METER BOARD BILL OF MATERIALS

QTY	DESCRIPTION	REF. DESIG.
2	6 PIN PC MOUNT MOLEX CONN.	J1,2
1	7808 8 VOLT REGULATOR IC	U1
1	LM324 OP AMP	U2
1	LM 393 COMPARATOR	U3
1	NE555 TIMER	U4
4	1N5408 DIODE	D1,2,5,6
5	1N4148 DIODE	D3,4,8,9,11
1	1N4742 DIODE	D7
1	2N2222A TRANSISTOR	Q1
1	AROMAT D2SE RELAY	K1
2	200 OHM 1/2 WATT POT VERT MT.	R11,23
3	HIGH MU FERRITE BEADS CN20	L1-3
1	110 OHM 1/4 W 5% RESISTOR	R1
4	2.2K OHM 1/4 W 5% RES	R2-5
9	10K OHM 1/4 W 5% RES	R6-8,12,12,15 17,20,25
3	1K OHM 1/4 W 5% RES	R9,19,28
1	15K OHM 1/4 W 5% RES	R10
2	1 MEG OHM 1/4 W 5% RES	R14,21
4	47K OHM 1/4 W 5% RES	R16,18,31,32
1	1.4K OHM 1/4 W 5% RES	R22
1	2K OHM 1/4 W 5% RES	R24
1	220K OHM 1/4 W 5% RES	R26
1	330 OHM 1/4 W 5% RES	R27
1	18 OHM 1/4 W 5% RES	R29
1	.15 OHM 3 WATT 5% RES	R30 *IN LK800 ONLY*
14	0.1uF 63 V CAP	C1,2,4,5,9,11,13,14 16,17,19,22,23,24
8	0.01uF 63 V CAP	C3,6,7,8,10,12,18,20
4	10uF 25V ELECTROLYTIC	C15,21,25,27

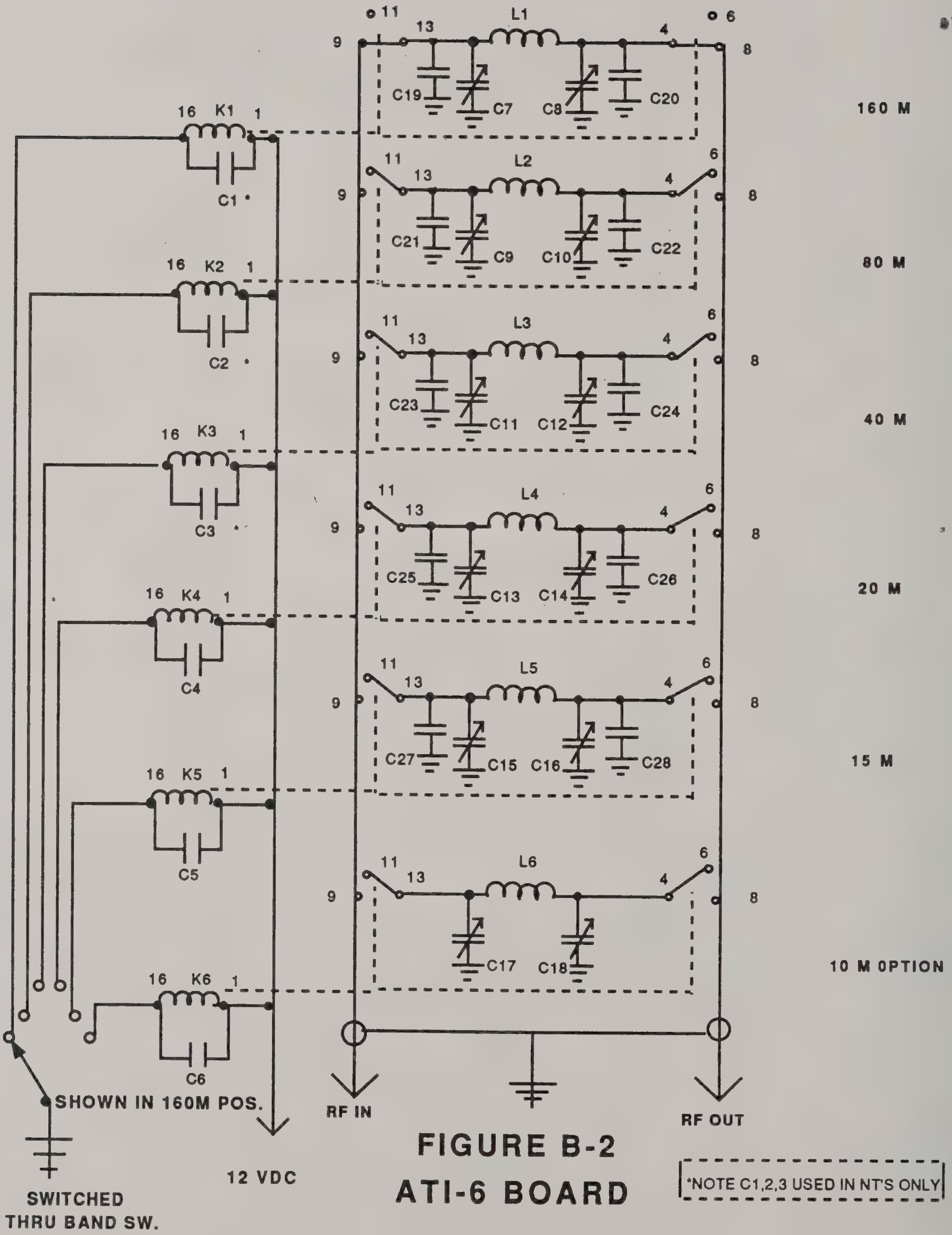
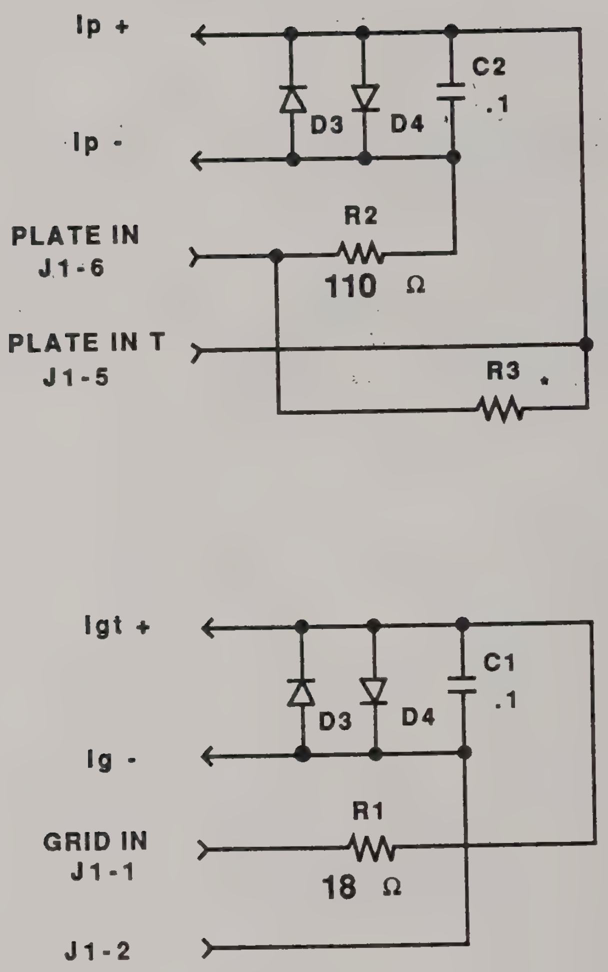


FIGURE B-2
ATI-6 BOARD

*NOTE C1,2,3 USED IN NT'S ONLY

ATI-6 BOARD BILL OF MATERIALS

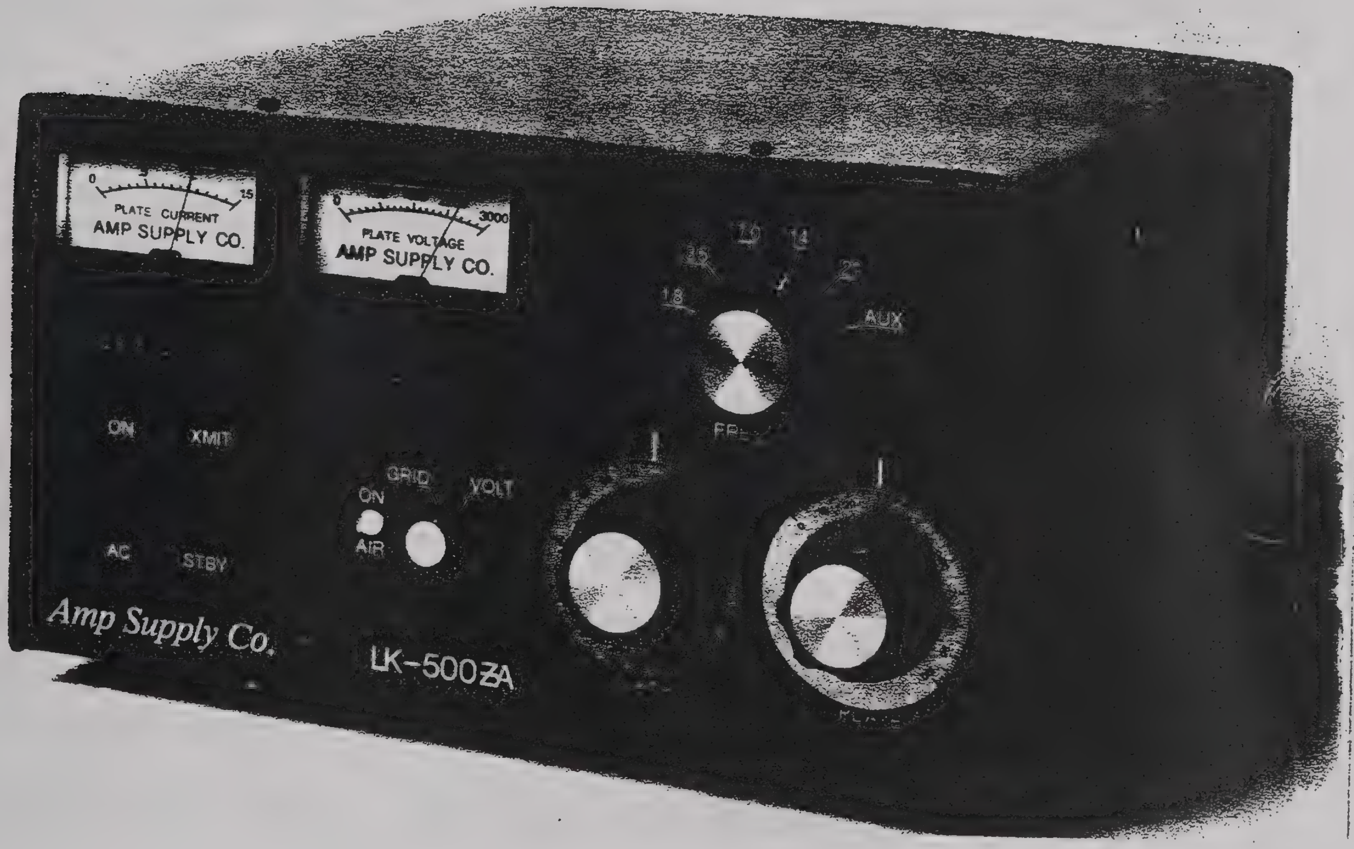
QTY	DESCRIPTION	REF. DESG.
6	AROMAT D2SE RELAY	K1-6
6	TOROIDAL INDUCTORS	L1-6
6	0.01uF DISC CAP.	C1-6
8	VARIABLE CAP.(700'S)	C7-14
4	VARIABLE CAP.(600'S)	C15-18
10	CAPACITANCE OPTIMIZED FOR EACH MODEL AMPLIFIER	C19-28



*R3 NORMALLY OPEN

FIGURE B-3 METER BOARD

Amp Supply Co.



INTRODUCTION

The Amp Supply LK500ZA Linear Amplifier is a compact 2500 Watts PEP 160-15 meter amplifier of modern design. It is a high performance piece of equipment requiring a minimum of maintenance through years of operation. The LK500ZA was engineered conservatively, with American components and ingenuity. The unit is field-tested and rated for 2500 Watts PEP input continuous in SSB service and 1000 Watts DC input along with many MARS operating frequencies, without modifications.

Two EIMAC 3-500Z triodes are employed, operating in grounded grid in conjunction with a solid state power supply capable of either 117V or 234V operation. The LK500ZA uses a double duty cooling system which allows cooling of not only the tubes, but the power supply as well.

Tuning the LK500ZA is a simple procedure, since the unit is designed for long-term stability in virtually any operating situation. Tuned input and standard relay switching circuitry makes the LK500ZA compatible with any solid state or tube transceiver or transmitter available. The LK500ZA, despite its straight-forward design and minimal user required adjustment, is nonetheless a sophisticated electronic instrument. Therefore, if the unit is operated outside the parameters outlined in this owner's manual, it is possible that damage can result.

Please read this manual carefully before putting your LK500ZA on the air.

WARNING

TO TAKE FULL ADVANTAGE OF THE LK500ZA COOLING SYSTEM, IT IS REQUIRED THAT THE AMPLIFIER BE OPERATED WITH AT LEAST 2-1/2" CLEARANCE ON BOTH SIDES AND TOP OF THE UNIT.

CAUTIONS

1. Make no attempt to put the LK500ZA in service outside of the cabinet. Contact with high voltages in this Amplifier can be FATAL TO THE HUMAN BODY.
2. Never attempt to operate the LK500ZA with drive power of more than 125 Watts!
3. Never attempt to operate the LK500ZA without first connecting it to an antenna with an SWR of less than 2:1, or a 50 Ohm dummy load of sufficient power handling capacity or serious damage may result to the amplifier.

4. Do not, under any circumstances, operate the LK500ZA from a 117 Volt lighting circuit because the circuit conductors are not large enough to safely carry this load.

5. Never-run Amplifier from an extension cord.

6. Do not attempt to change jumper connections on primary of Amplifier without first removing power from the LK500ZA.

7. Do not cover the top of the LK500ZA with books, papers or other pieces of equipment or overheating may result.

8. Do not use different tuning procedures other than indicated in this manual.

9. When cleaning the LK500ZA never blow high pressure air directly into the fan blades. Spinning the fan at higher speeds than it was designed for can cause damage and freeze the rotor assembly of the fan. Use a brush in cleaning the fan assembly.

SPECIFICATIONS

FREQUENCY COVERAGE:	Ham bands 160 through 10 meters*. Non-amateur frequencies between 1.8-4.0 and 6.5-24mHz may be covered with adjustment of the tuned input.
TYPICAL OUTPUT:	1500 Watts on SSB, 900 Watts CW and 600 Watts on SSTV, RTTY
DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	100 Watts PEP SSB, 65 Watts CW, 50 Watts RTTY, SSTV
INPUT IMPEDANCE:	50 Ohms - tuned input on each band
OUTPUT IMPEDANCE:	Adjustable Pi-network matches 50 Ohm load with SWR not to exceed 2:1
INTERMODULATION DISTORTION PRODUCTS:	In excess of -33dB below PEP
HARMONIC SUPRESSION:	In excess of -45dB
POWER REQUIREMENTS:	117 Volts 50/60 Hertz 25 Amps or 234 Volts 50/60 Hertz 12.5 Amps
DIMENSIONS:	9" H x 15" W x 15" D
WEIGHT:	52 LB

*OPTIONS: Ten Meter Modification Kit -- for licensed US amateurs

XPort Model, factory built-in 10 meter band

Specifications are subject to change without notice or obligation.

FRONT PANEL CONTROLS

ON-AC ROCKER SWITCH - Turns power on and off.

XMIT-STBY ROCKER SWITCH - Turns the amp from standby to operate mode.

BAND-SWITCH - Selects desired bands.

PLATE AND LOAD KNOBS - Tuning adjusts Pi-Network capacitors in tank circuit for proper resonance and loading on all bands.

PLATE CURRENT METER - Continuously monitors plate current of 3-500Z tubes.

GRID-VOLT METER - By use of the meter switch can monitor plate volts (0-3500 V or grid current (0-350 mA).

REAR JACKS

RF-IN - For connecting to exciter RF output.

RF-OUT - For connecting the LK500ZA to an antenna.

RLY - For connecting to exciter auxilary jack to activate T/R Relay.

INSTALLATION

1. Make no attempt to put the Amplifier in service outside of the cabinet -- contact with voltage in this Amplifier CAN BE FATAL.

2. Unpacking - Carefully remove your LK500ZA from its packing carton, and examine it closely for signs of shipping damages. Should any damage be apparent, notify the delivery carrier immediately, stating the full extent of the damage.

3. Install 3-500Z Tubes. WARNING The LK500ZA has been shipped from the factory without the tubes. These are packed separately. Be sure to install these items before turning on the LK500ZA.

Tube Installation. Carefully remove the EIMAC tubes from their boxes. Carefully move the two parasitic chokes in the tank compartment of the LK500ZA out of the way and install tubes. When tightening down the plate caps, only tighten screws snug--overtightening may damage tubes. Remove packing from under the tuned input board.

4. Fill out the enclosed warranty registration card and return to Amp Supply.

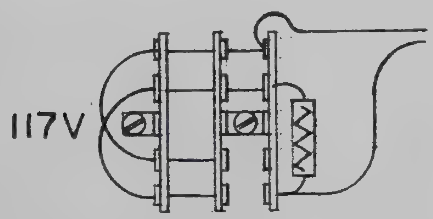
5. Location. In general, the location of the LK500ZA is not critical, however, there are certain considerations which must be given to insure optimum performance. Extremely hot locations, such as near radiators or heating units should be avoided. Do not cover the top of the Amplifier case with books, papers, or other pieces of equipment, or overheating may occur. The sides of the Amplifier case must not be obstructed and should not be placed closer than 2-1/2 inches from a wall or the air inlet and outlet for the blower will be blocked and overheating of the Amplifier tubes may occur.

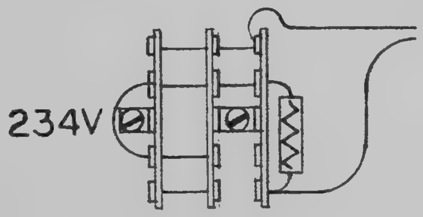
6. Power Requirements. The LK500ZA has a built-in continuous-duty power supply which can be operated from either 234 V AC or 117 V AC 50/60 Hz. A jumper network is provided inside of the Amplifier.

The LK500ZA is shipped from the factory with jumpers connected to operate on 234 V AC. It is highly recommended tha the LK500ZA be operated from its own 234 - 15 A (or greater) circuit. If a 117 V circuit is all that is available, it should be fused for 30 A and circuit conductors should not be less than #10 and no other equipment should be operated from this circuit. Never run Amplifier from an extension cord.

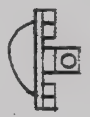
Below are pictorials of jumper connections located in the left rear corner of the chassis for both 234 V and 117 V operation. The jumpers must be connected as shown or severe damage to the LK500ZA components may result. Remove existing jumper before installing the new ones.

JUMPERS





QSK Operation. The LK500ZA is factory-wired for semibreak-in operation. If you wish to use QSK operation, a jumper wire must be installed. Inside the back panel find the 3-lug terminal strip located just above the 117/234 V jumper strip. Install a small jumper wire as shown.



NOTE: 3 LUG TERMINAL
TO ACTIVATE QSK IS
LOCATED ON BACK LEFT
SIDE UNDER QSK BOARD.
JUMPER AS SHOWN.

WARNING

COMPLETELY REMOVE POWER FROM LK500ZA BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS ON BACK OF AMPLIFIER.

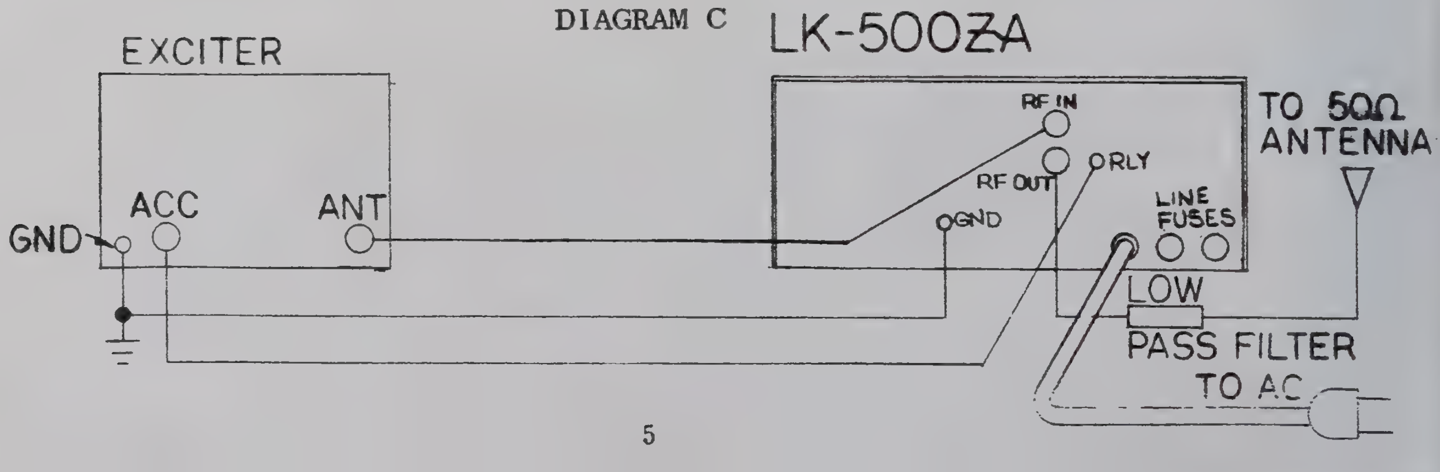
7. Amplifier Installation. After the tubes have been installed, connect your LK500ZA to your power source. Set the Amplifier Controls as follows:

AC/ON - OFF
XMIT/STBY - STBY
METER - VOLTS

Turn the unit on. Plate voltage will read between 2700-3000 Volts DC. Turn the unit off.

8. Cable Installation. (see Diagram C) Using as short a length as possible, connect a 52-Ohm coaxial cable between your exciter's RF Output and the LK500ZA rear panel RF Input connector. Next connect another short length of 52-Ohm coaxial cable (RG-8U or equivalent) from the RF Output connector to a suitable Wattmeter and Antenna system. Next, a piece of shielded cable should be installed between the RCA type jack on the rear panel marked RLY and the accessory contacts of your exciter. These should be normally open contacts that are closed on TRANSMIT. (See your exciter operator's manual.) This completes hookup of the LK500ZA.

DIAGRAM C



Antenna Requirements. The LK500ZA has been designed for use with antennas resonant at the operation frequency and having approximate impedances within the limits of 30 to 75 Ohms.

The nominal output impedance of the LK500ZA is 50 Ohms and the SWR of this load should never exceed 2:1. Although there are many types of antennas which will meet these requirements, the simplest is a one-half (1/2) wave dipole center fed with 52 Ohm coax. For a detailed discussion on antennas, we suggest referring to an appropriate antenna book.

Most practical antennas exhibit an SWR range over a complete amateur band that exceeds 2:1. For this reason we recommend using an antenna matching network which will allow the LK500ZA to work into a 50 Ohm resistive load for maximum power transfer into the antenna.

CAUTION

NEVER ATTEMPT TO OPERATE THE LK500ZA WITHOUT FIRST CONNECTING IT TO AN ANTENNA OR 50 OHM DUMMY LOAD OF SUFFICIENT POWER HANDLING CAPACITY OR SERIOUS DAMAGE MAY RESULT.

Ground Requirements. The LK500ZA should be attached to a good earth ground through as short and as large a ground strap as possible for best results. A ground post is provided on the rear of the LK500ZA chassis for this purpose. It is always a good idea to connect the chassis of all associated equipment together and ground them at one point to avoid ground loops. We recommend that all of the equipment in your station be connected together and grounded at the Antenna Tuner.

TUNING PROCEDURE

WARNING

THIS UNIT IS SHIPPED READY FOR 234 VAC OPERATION. IF YOUR APPLICATION REQUIRES RUNNING THE LK500ZA ON 117 VAC, SEE "POWER REQUIREMENTS" UNDER INSTALLATION INSTRUCTIONS.

1. Set the Bandswitch to the desired band.
2. Set the Load Control on number shown on tuning chart.
3. Set the Tune Control on number shown on tuning chart.
4. Set the On/Ac Control to ON.
5. Set the Xmit/Stby Control to XMIT.

6. Set Meter switch to grid current. (This is read on Plate/Grid Current Meter.

BAND	FREQ-MHz	LOAD	PLATE
160M	1.800	100	50
	1.900	100	25
80M	3.600	85	75
	3.900	50	65
40M	7.100	85	45
	7.200	75	45
20M	14.100	60	25
	14.200	50	25
15M	21.100	40	20
	21.200	40	20
10M*	28.200	40	17
	28.800	40	15

* EXPORT ONLY

7. Insert a small amount of exciter drive until the plate current begins to rise to approximately 300mA.

8. Rotate the Tune Control for maximum output on your station wattmeter.

9. Go between Tune and Load for maximum output.
1 KW input (Plate Voltage x Plate Current = Power Input)
Example: Plate Current = 400mA
Plate Voltage = 2500 V DC
.4 x 2500 V = 1000 Watts Input

10. Increase drive power. Repeat steps 8 through 10 until you obtain desired output.

11. During tune up alternately monitor Grid and Plate Current.

12. Grid current can be reduced by slightly decreasing the Load control.

13. ALWAYS TUNE FOR MAXIMUM OUTPUT !

WARNING

CURRENT LIMITATIONS FOR NORMAL OPERATION:

Plate Current. . . not to exceed 900 MA.
Grid Current . . . under tune up, RTTY, or SSTV, never to exceed 300 mA.
. . . on SSB voice peaks should average less than 200mA while operating.
. . . on CW between 100 and 250mA, depending on sending speed.

SERVICE DATA

CAUTION

EXTREME CARE MUST BE TAKEN WHENEVER MAKING ANY ADJUSTMENTS INSIDE THE LK500ZA.

Removing Top Cover. After completely disconnecting the LK500ZA from power wait 30 minutes so all electrolytic capacitors have discharged through their bleeding resistors. The top cover can then be safely removed by taking out the top and side row of screws.

Cleaning Amplifier Compartment. Since the Amplifier compartment is forced-air cooled, it will collect particles of dust which must be removed periodically. The frequency of cleaning will be governed by how many hours the LK500ZA is operated, and by how clean its environment is. When the blower blade accumulates a large amount of dust, the Amplifier should be cleaned. The best way to clean the LK500ZA is to remove the top cover and blow the dust out with compressed air. If compressed air is not available, a soft-bristled one-inch paint brush can be used to brush the Amplifier clean.

WARNING

DO NOT BLOW AIR DIRECTLY INTO THE FAN BLADES. USE A BRUSH IN CLEANING THE BLADES OF THE FAN.

Tube Replacement. If it becomes necessary to replace the tubes in the LK500ZA the same brand should be used. A new tube kit is available from Amp Supply Co.

Trouble Shooting. Careful consideration has been given to the design of the Lk500ZA to keep maintenance problems to a minimum. However, it is possible that some problem will arise which cannot be cured by tube substitution. If this occurs, we suggest that you contact our customer service department, describing your problem in detail. Include full information concerning external connections, control settings, associated equipment, antenna, being sure to indicate the serial number of the LK500ZA. Do not return equipment to the factory without prior authorization.

being sure to indicate the serial number of the LK500ZA. Do not return equipment to the factory without prior authorization.

Returning the LK500ZA to the factory for service. Obtain a return authorization from the customer service department. Amp Supply Co. will assume no responsibility if the transportation company refuses to pay a damage claim due to improper packing or lack of insurance. Be certain to remove the tubes prior to shipping and return the tubes in a separate carton.

PARTLIST.5ZA

LK500ZA PARTS LIST

DRAWING SYMBOL	DESCRIPTION
B1	BLOWER MOTOR
L1-14	.01 1 KV DISC
C22-25, C52-54	
C15	1000 UF 25 V ELECT.
C16-21	125 UF 500 V ELECT.
C26,33	1000 PF 5 KV
C28	.001 7.5 KV DISC.
C29	250 PF VARIABLE
C30,31,35	200 PF 5 KV
C32	800 PF VARIABLE
C34	500 PF 5 KV
C36-45	INPUT TRIMMERS
C46-51	FACTORY SELECTED INPUT PADDERS
D1-2	IN4007 OR EQUIVALENT
D3	IN3308
D4-12	IN5408
FU1,FU2	15 A (220 V) 25 A (110 V)
J1,2	SO239 CONNECTOR
J3	RCA PHONO CONNECTOR
K1	3PDT 12 V RELAY
K2-6	DPST 12 V RELAY
L1	TANK COIL (14 MHZ-30 MHZ)
L2	TANK COIL (1.8-14 MHZ)
L3-7	FACTORY SELECTED INPUT COILS
M1	0-1, 5 A METER
M2	0-3 KV, 0-300 MA METER
R1,R5	100 K 2 W
R2,R3	FACTORY SELECTER METER SHUNT
R4	250 OHM 10 W
R6-11	200 K 4 W
R12,13	FACTORY SELECTED METER RESISTOR
RFC 1	30 AMP BIFILAR FILAMENT CHOKE
RFC 2,3	PARASITIC CHOKE
RFC 4	PLATE CHOKE
RFC 5	2.5 MH CHOKE
S1	SPDT ROTARY
S2,S3	SPST ROCKER
S4	BANDSWITCH
T1	5 V 30 A TRANSFORMER
T2	POWER TRANSFORMER
TS1	TERMINAL STRIP FOR 117/234 JUMPERS
V1,V2	3-500Z TUBES

LIMITED WARRANTY

Amp Supply Co. warrants to the original purchaser that this product shall be free from defects in material (except tubes and RF output transistors) or workmanship for two (2) years from the date of original purchase. During the warranty period the Amp Supply co. or an authorized Amp Supply Co. service facility will provide free of charge both parts (except tubes and RF output transistors) and labor necessary to correct defects in material or workmanship.

To obtain such warranty service, the original purchaser must:

(1) Complete and send in the Warranty Registration Card.
(2) Notify Amp Supply Co. or its nearest authorized service facility, as soon as possible after discovery of a possible defect, of :
    (a) The model number and serial number, if any;
    (b) The identity of the seller and the approximate date of purchase;
    (c) A detailed description of the problem including details on the electrical connection to associated equipment and the list of such equipment.
(3) Deliver the product to the Amp Supply Co. or the nearest authorized service facility, or ship the same in its original container or equivalent, fully insured and shipping charges prepaid.

Correct maintenance, repair and use are important to obtain proper performance from this product. Therefore, carefully read the Instruction Manual. This warranty does not apply to any defect that Amp Supply Co. determines is due to:

(1) Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and specifications of the original parts.
(2) Misuse, abuse neglect or improper installation.
(3) Accidental or intentional damage.

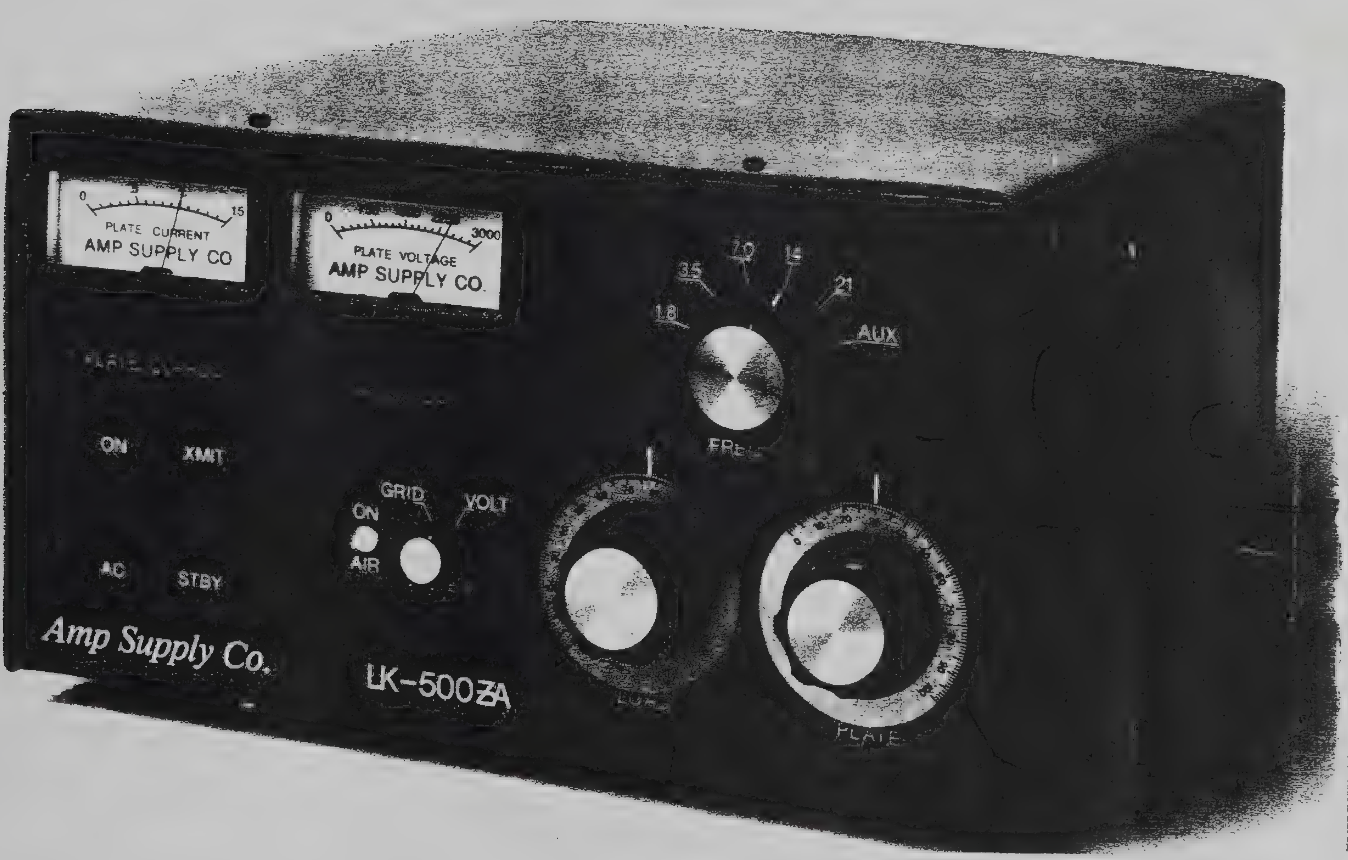
All implied warranties, if any, terminate two (2) years from the date of the original purchase.

The foregoing constitutes Amp Supply Co.'s entire obligation with respect to this product, and the original purchaser and any user or owner shall have no other remedy and no claim for incidental or consequential damages. Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

This warranty gives specific legal rights and you may also have other rights which vary from state to state.

AMP SUPPLY CO., 2071 MIDWAY, P.O.BOX 421, TWINSBURG, OH 44087
TEL. (216) 425-2010 TLX 980131 WDMR

Amp Supply Co.



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DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	100 Watts PEP SSB, 65 Watts CW, 50 Watts RTTY, SSTV
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INTERMODULATION DISTORTION PRODUCTS:	In excess of -33dB below PEP
HARMONIC SUPRESSION:	In excess of -45dB
POWER REQUIREMENTS:	117 Volts 50/60 Hertz 25 Amps or 234 Volts 50/60 Hertz 12.5 Amps
DIMENSIONS:	9" H x 15" W x 15" D
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XPort Model, factory built-in 10 meter band

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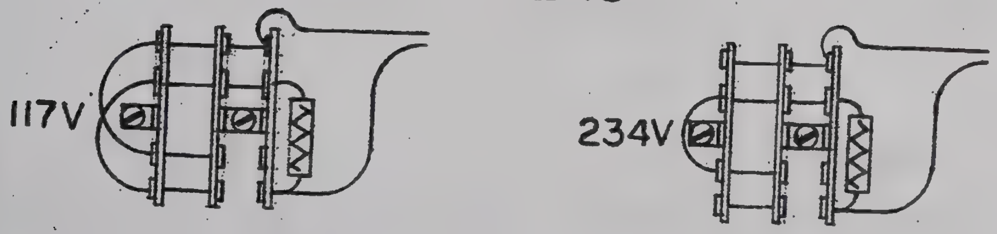
5. Location. In general, the location of the LK500ZA is not critical, however, there are certain considerations which must be given to insure optimum performance. Extremely hot locations, such as near radiators or heating units should be avoided. Do not cover the top of the Amplifier case with books, papers, or other pieces of equipment, or overheating may occur. The sides of the Amplifier case must not be obstructed and should not be placed closer than 2-1/2 inches from a wall or the air inlet and outlet for the blower will be blocked and overheating of the Amplifier tubes may occur.

6. Power Requirements. The LK500ZA has a built-in continuous-duty power supply which can be operated from either 234 V AC or 117 V AC 50/60 Hz. A jumper network is provided inside of the Amplifier.

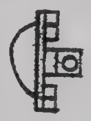
The LK500ZA is shipped from the factory with jumpers connected to operate on 234 V AC. It is highly recommended tha the LK500ZA be operated from its own 234 - 15 A (or greater) circuit. If a 117 V circuit is all that is available, it should be fused for 30 A and circuit conductors should not be less than #10 and no other equipment should be operated from this circuit. Never run Amplifier from an extension cord.

Below are pictorials of jumper connections located in the left rear corner of the chassis for both 234 V and 117 V operation. The jumpers must be connected as shown or severe damage to the LK500ZA components may result. Remove existing jumper before installing the new ones.

JUMPERS



QSK Operation. The LK500ZA is factory-wired for semibreak-in operation. If you wish to use QSK operation, a jumper wire must be installed. Inside the back panel find the 3-lug terminal strip located just above the 117/234 V jumper strip. Install a small jumper wire as shown.



NOTE: 3 LUG TERMINAL TO ACTIVATE QSK IS LOCATED ON BACK LEFT SIDE UNDER QSK BOARD. JUMPER AS SHOWN.

WARNING

COMPLETELY REMOVE POWER FROM LK500ZA BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS ON BACK OF AMPLIFIER.

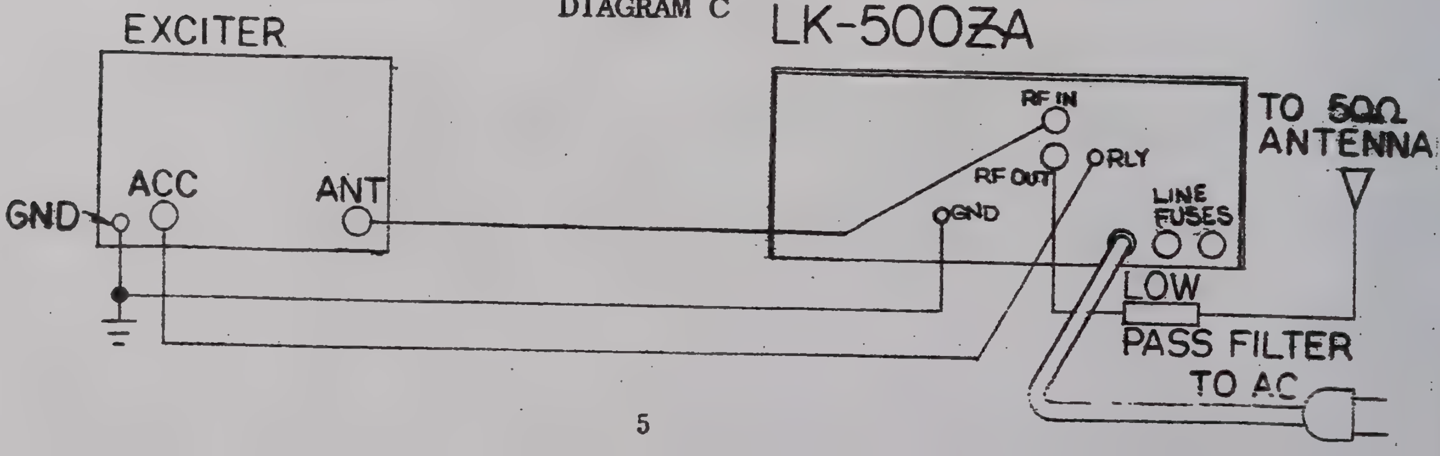
7. Amplifier Installation. After the tubes have been installed, connect your LK500ZA to your power source. Set the Amplifier Controls as follows:

   AC/ON - OFF
   XMIT/STBY - STBY
   METER - VOLTS

   Turn the unit on. Plate voltage will read between 2700-3000 Volts DC. Turn the unit off.

8. Cable Installation. (see Diagram C) Using as short a length as possible, connect a 52-Ohm coaxial cable between your exciter's RF Output and the LK500ZA rear panel RF Input connector. Next connect another short length of 52-Ohm coaxial cable (RG-8U or equivalent) from the RF Output connector to a suitable Wattmeter and Antenna system. Next, a piece of shielded cable should be installed between the RCA type jack on the rear panel marked RLY and the accessory contacts of your exciter. These should be normally open contacts that are closed on TRANSMIT. (See your exciter operator's manual.) This completes hookup of the LK500ZA.

DIAGRAM C



Antenna Requirements. The LK500ZA has been designed for use with antennas resonant at the operation frequency and having approximate impedances within the limits of 30 to 75 Ohms.

The nominal output impedance of the LK500ZA is 50 Ohms and the SWR of this load should never exceed 2:1. Although there are many types of antennas which will meet these requirements, the simplest is a one-half (1/2) wave dipole center fed with 52 Ohm coax. For a detailed discussion on antennas, we suggest referring to an appropriate antenna book.

Most practical antennas exhibit an SWR range over a complete amateur band that exceeds 2:1. For this reason we recommend using an antenna matching network which will allow the LK500ZA to work into a 50 Ohm resistive load for maximum power transfer into the antenna.

CAUTION

NEVER ATTEMPT TO OPERATE THE LK500ZA WITHOUT FIRST CONNECTING IT TO AN ANTENNA OR 50 OHM DUMMY LOAD OF SUFFICIENT POWER HANDLING CAPACITY OR SERIOUS DAMAGE MAY RESULT.

Ground Requirements. The LK500ZA should be attached to a good earth ground through as short and as large a ground strap as possible for best results. A ground post is provided on the rear of the LK500ZA chassis for this purpose. It is always a good idea to connect the chassis of all associated equipment together and ground them at one point to avoid ground loops. We recommend that all of the equipment in your station be connected together and grounded at the Antenna Tuner.

TUNING PROCEDURE

WARNING

THIS UNIT IS SHIPPED READY FOR 234 VAC OPERATION. IF YOUR APPLICATION REQUIRES RUNNING THE LK500ZA ON 117 VAC, SEE "POWER REQUIREMENTS" UNDER INSTALLATION INSTRUCTIONS.

1. Set the Bandswitch to the desired band.
2. Set the Load Control on number shown on tuning chart.
3. Set the Tune Control on number shown on tuning chart.
4. Set the On/Ac Control to ON.
5. Set the Xmit/Stby Control to XMIT.

6. Set Meter switch to grid current. (This is read on Plate/Grid Current Meter.

BAND	FREQ-MHz	LOAD	PLATE
160M	1.800	100	50
	1.900	100	25
80M	3.600	85	75
	3.900	50	65
40M	7.100	85	45
	7.200	75	45
20M	14.100	60	25
	14.200	50	25
15M	21.100	40	20
	21.200	40	20
10M*	28.200	40	17
	28.800	40	15

* EXPORT ONLY

7. Insert a small amount of exciter drive until the plate current begins to rise to approximately 300mA.

8. Rotate the Tune Control for maximum output on your station wattmeter.

9. Go between Tune and Load for maximum output.
1 KW input (Plate Voltage x Plate Current = Power Input)
Example: Plate Current = 400mA
Plate Voltage = 2500 V DC
.4 x 2500 V = 1000 Watts Input

10. Increase drive power. Repeat steps 8 through 10 until you obtain desired output.

11. During tune up alternately monitor Grid and Plate Current.

12. Grid current can be reduced by slightly decreasing the Load control.

13. ALWAYS TUNE FOR MAXIMUM OUTPUT !

WARNING

CURRENT LIMITATIONS FOR NORMAL OPERATION:

Plate Current. . . not to exceed 900 MA.
Grid Current . . . under tune up, RTTY, or SSTV, never to exceed 300 mA.
. . . on SSB voice peaks should average less than 200mA while operating.
. . . on CW between 100 and 250mA, depending on sending speed.

SERVICE DATA

CAUTION

EXTREME CARE MUST BE TAKEN WHENEVER MAKING ANY ADJUSTMENTS INSIDE THE LK500ZA.

Removing Top Cover. After completely disconnecting the LK500ZA from power wait 30 minutes so all electrolytic capacitors have discharged through their bleeding resistors. The top cover can then be safely removed by taking out the top and side row of screws.

Cleaning Amplifier Compartment. Since the Amplifier compartment is forced-air cooled, it will collect particles of dust which must be removed periodically. The frequency of cleaning will be governed by how many hours the LK500ZA is operated, and by how clean its environment is. When the blower blade accumulates a large amount of dust, the Amplifier should be cleaned. The best way to clean the LK500ZA is to remove the top cover and blow the dust out with compressed air. If compressed air is not available, a soft-bristled one-inch paint brush can be used to brush the Amplifier clean.

WARNING

DO NOT BLOW AIR DIRECTLY INTO THE FAN BLADES. USE A BRUSH IN CLEANING THE BLADES OF THE FAN.

Tube Replacement. If it becomes necessary to replace the tubes in the LK500ZA the same brand should be used. A new tube kit is available from Amp Supply Co.

Trouble Shooting. Careful consideration has been given to the design of the Lk500ZA to keep maintenance problems to a minimum. However, it is possible that some problem will arise which cannot be cured by tube substitution. If this occurs, we suggest that you contact our customer service department, describing your problem in detail. Include full information concerning external connections, control settings, associated equipment, antenna, being sure to indicate the serial number of the LK500ZA. Do not return equipment to the factory without prior authorization.

being sure to indicate the serial number of the LK500ZA. Do not return equipment to the factory without prior authorization.

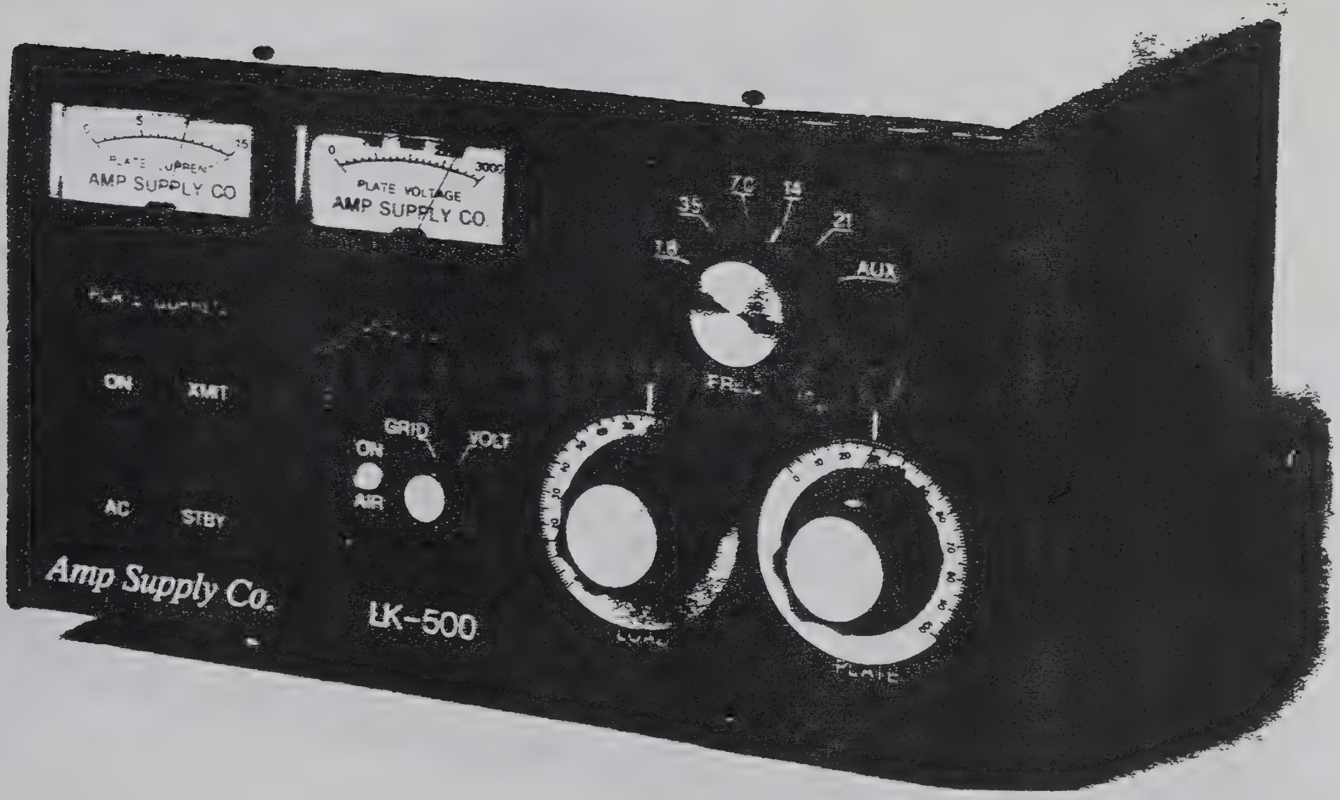
Returning the LK500ZA to the factory for service. Obtain a return authorization from the customer service department. Amp Supply Co. will assume no responsibility if the transportation company refuses to pay a damage claim due to improper packing or lack of insurance. Be certain to remove the tubes prior to shipping and return the tubes in a separate carton.

PARTLIST.5ZA

LK500ZA PARTS LIST

DRAWING SYMBOL	DESCRIPTION
B1	
L1-14	BLOWER MOTOR
C22-25, C52-54	.01 1 KV DISC
C15	
C16-21	1000 UF 25 V ELECT.
C26,33	125 UF 500 V ELECT.
C28	1000 PF 5 KV
C29	.001 7.5 KV DISC.
C30,31,35	250 PF VARIABLE
C32	200 PF 5 KV
C34	800 PF VARIABLE
C36-45	500 PF 5 KV
C46-51	INPUT TRIMMERS
D1-2	FACTORY SELECTED INPUT PADDERS
D3	IN4007 OR EQUIVALENT
D4-12	IN3308
FU1,FU2	IN5408
J1,2	15 A (220 V) 25 A (110 V)
J3	SO239 CONNECTOR
K1	RCA PHONO CONNECTOR
K2-6	3PDT 12 V RELAY
L1	DPST 12 V RELAY
L2	TANK COIL (14 MHZ-30 MHZ)
L3-7	TANK COIL (1.8-14 MHZ)
M1	FACTORY SELECTED INPUT COILS
M2	0-1, 5 A METER
R1,R5	0-3 KV, 0-300 MA METER
R2,R3	100 K 2 W
R4	FACTORY SELECTER METER SHUNT
R6-11	250 OHM 10 W
R12,13	200 K 4 W
RFC 1	FACTORY SELECTED METER RESISTOR
RFC 2,3	30 AMP BIFILAR FILAMENT CHOKE
RFC 4	PARASITIC CHOKE
RFC 5	PLATE CHOKE
S1	2.5 MH CHOKE
S2,S3	SPDT ROTARY
S4	SPST ROCKER
T1	BANDSWITCH
T2	5 V 30 A TRANSFORMER
TS1	POWER TRANSFORMER
V1,V2	TERMINAL STRIP FOR 117/234 JUMPERS
	3-500Z TUBES

Amp Supply Co.



LK-500 NTB

Amp Supply Co.

INTRODUCTION

The Amp Supply LK500ZA Linear Amplifier is a compact 2500 Watts PEP 160-15 meter amplifier of modern design. It is a high performance piece of equipment requiring a minimum of maintenance through years of operation. The LK500ZA was engineered conservatively, with American components and ingenuity. The unit is field-tested and rated for 2500 Watts PEP input continuous in SSB service and 1000 Watts DC input along with many MARS operating frequencies, without modifications.

Two EIMAC 3-500Z triodes are employed, operating in grounded grid in conjunction with a solid state power supply capable of either 117V or 234V operation. The LK500ZA uses a double duty cooling system which allows cooling of not only the tubes, but the power supply as well.

Tuning the LK500ZA is a simple procedure, since the unit is designed for long-term stability in virtually any operating situation. Tuned input and standard relay switching circuitry makes the LK500ZA compatible with any solid state or tube transceiver or transmitter available. The LK500ZA, despite its straight-forward design and minimal user required adjustment, is nonetheless a sophisticated electronic instrument. Therefore, if the unit is operated outside the parameters outlined in this owner's manual, it is possible that damage can result.

Please read this manual carefully before putting your LK500ZA on the air.

WARNING

TO TAKE FULL ADVANTAGE OF THE LK500ZA COOLING SYSTEM, IT IS REQUIRED THAT THE AMPLIFIER BE OPERATED WITH AT LEAST 2-1/2" CLEARANCE ON BOTH SIDES AND TOP OF THE UNIT.

CAUTIONS

1. Make no attempt to put the LK500ZA in service outside of the cabinet. Contact with high voltages in this Amplifier can be FATAL TO THE HUMAN BODY.
2. Never attempt to operate the LK500ZA with drive power of more than 125 Watts!
3. Never attempt to operate the LK500ZA without first connecting it to an antenna with an SWR of less than 2:1, or a 50 Ohm dummy load of sufficient power handling capacity or serious damage may result to the amplifier.

4. Do not, under any circumstances, operate the LK500ZA from a 117 Volt lighting circuit because the circuit conductors are not large enough to safely carry this load.

5. Never-run Amplifier from an extension cord.

6. Do not attempt to change jumper connections on primary of Amplifier without first removing power from the LK500ZA.

7. Do not cover the top of the LK500ZA with books, papers or other pieces of equipment or overheating may result.

8. Do not use different tuning procedures other than indicated in this manual.

9. When cleaning the LK500ZA never blow high pressure air directly into the fan blades. Spinning the fan at higher speeds than it was designed for can cause damage and freeze the rotor assembly of the fan. Use a brush in cleaning the fan assembly.

SPECIFICATIONS

FREQUENCY COVERAGE:	Ham bands 160 through 10 meters*. Non-amateur frequencies between 1.8-4.0 and 6.5-24mHz may be covered with adjustment of the tuned input.
TYPICAL OUTPUT:	1500 Watts on SSB, 900 Watts CW and 600 Watts on SSTV, RTTY
DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	100 Watts PEP SSB, 65 Watts CW, 50 Watts RTTY, SSTV
INPUT IMPEDANCE:	50 Ohms - tuned input on each band
OUTPUT IMPEDANCE:	Adjustable Pi-network matches 50 Ohm load with SWR not to exceed 2:1
INTERMODULATION DISTORTION PRODUCTS:	In excess of -33dB below PEP
HARMONIC SUPRESSION:	In excess of -45dB
POWER REQUIREMENTS:	117 Volts 50/60 Hertz 25 Amps or 234 Volts 50/60 Hertz 12.5 Amps
DIMENSIONS:	9" H x 15" W x 15" D
WEIGHT:	52 LB

*OPTIONS: Ten Meter Modification Kit -- for licensed US amateurs
XPort Model, factory built-in 10 meter band

Specifications are subject to change without notice or obligation.

FRONT PANEL CONTROLS

ON-AC ROCKER SWITCH - Turns power on and off.

XMIT-STBY ROCKER SWITCH - Turns the amp from standby to operate mode.

BAND-SWITCH - Selects desired bands.

PLATE AND LOAD KNOBS - Tuning adjusts Pi-Network capacitors in tank circuit for proper resonance and loading on all bands.

PLATE CURRENT METER - Continuously monitors plate current of 3-500Z tubes.

GRID-VOLT METER - By use of the meter switch can monitor plate volts (0-3500 V or grid current (0-350 mA).

REAR JACKS

RF-IN - For connecting to exciter RF output.

RF-OUT - For connecting the LK500ZA to an antenna.

RLY - For connecting to exciter auxilary jack to activate T/R Relay.

INSTALLATION

1. Make no attempt to put the Amplifier in service outside of the cabinet -- contact with voltage in this Amplifier CAN BE FATAL.

2. Unpacking - Carefully remove your LK500ZA from its packing carton, and examine it closely for signs of shipping damages. Should any damage be apparent, notify the delivery carrier immediately, stating the full extent of the damage.

3. Install 3-500Z Tubes. WARNING The LK500ZA has been shipped from the factory without the tubes. These are packed separately. Be sure to install these items before turning on the LK500ZA.

Tube Installation. Carefully remove the EIMAC tubes from their boxes. Carefully move the two parasitic chokes in the tank compartment of the LK500ZA out of the way and install tubes. When tightening down the plate caps, only tighten screws snug--overtightening may damage tubes. Remove packing from under the tuned input board.

4. Fill out the enclosed warranty registration card and return to Amp Supply.

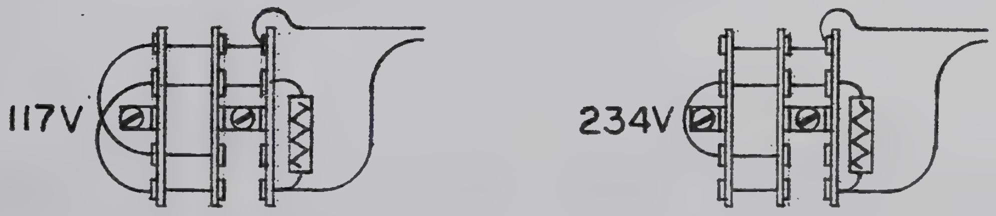
5. Location. In general, the location of the LK500ZA is not critical, however, there are certain considerations which must be given to insure optimum performance. Extremely hot locations, such as near radiators or heating units should be avoided. Do not cover the top of the Amplifier case with books, papers, or other pieces of equipment, or overheating may occur. The sides of the Amplifier case must not be obstructed and should not be placed closer than 2-1/2 inches from a wall or the air inlet and outlet for the blower will be blocked and overheating of the Amplifier tubes may occur.

6. Power Requirements. The LK500ZA has a built-in continuous-duty power supply which can be operated from either 234 V AC or 117 V AC 50/60 Hz. A jumper network is provided inside of the Amplifier.

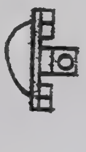
The LK500ZA is shipped from the factory with jumpers connected to operate on 234 V AC. It is highly recommended tha the LK500ZA be operated from its own 234 - 15 A (or greater) circuit. If a 117 V circuit is all that is available, it should be fused for 30 A and circuit conductors should not be less than #10 and no other equipment should be operated from this circuit. Never run Amplifier from an extension cord.

Below are pictorials of jumper connections located in the left rear corner of the chassis for both 234 V and 117 V operation. The jumpers must be connected as shown or severe damage to the LK500ZA components may result. Remove existing jumper before installing the new ones.

JUMPERS



QSK Operation. The LK500ZA is factory-wired for semibreak-in operation. If you wish to use QSK operation, a jumper wire must be installed. Inside the back panel find the 3-lug terminal strip located just above the 117/234 V jumper strip. Install a small jumper wire as shown.



NOTE: 3 LUG TERMINAL
TO ACTIVATE QSK IS
LOCATED ON BACK LEFT
SIDE UNDER QSK BOARD.
JUMPER AS SHOWN.

WARNING

COMPLETELY REMOVE POWER FROM LK500ZA BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS ON BACK OF AMPLIFIER.

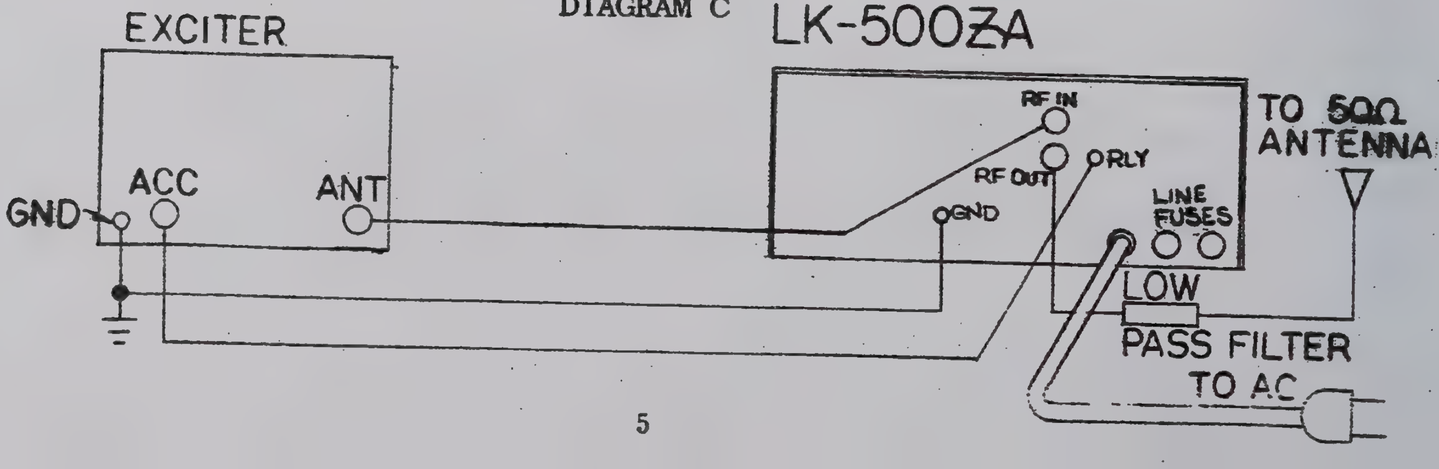
7. Amplifier Installation. After the tubes have been installed, connect your LK500ZA to your power source. Set the Amplifier Controls as follows:

AC/ON	-	OFF
XMIT/STBY	-	STBY
METER	-	VOLTS

Turn the unit on. Plate voltage will read between 2700-3000 Volts DC. Turn the unit off.

8. Cable Installation. (see Diagram C) Using as short a length as possible, connect a 52-Ohm coaxial cable between your exciter's RF Output and the LK500ZA rear panel RF Input connector. Next connect another short length of 52-Ohm coaxial cable (RG-8U or equivalent) from the RF Output connector to a suitable Wattmeter and Antenna system. Next, a piece of shielded cable should be installed between the RCA type jack on the rear panel marked RLY and the accessory contacts of your exciter. These should be normally open contacts that are closed on TRANSMIT. (See your exciter operator's manual.) This completes hookup of the LK500ZA.

DIAGRAM C



Antenna Requirements. The LK500ZA has been designed for use with antennas resonant at the operation frequency and having approximate impedances within the limits of 30 to 75 Ohms.

The nominal output impedance of the LK500ZA is 50 Ohms and the SWR of this load should never exceed 2:1. Although there are many types of antennas which will meet these requirements, the simplest is a one-half (1/2) wave dipole center fed with 52 Ohm coax. For a detailed discussion on antennas, we suggest referring to an appropriate antenna book.

Most practical antennas exhibit an SWR range over a complete amateur band that exceeds 2:1. For this reason we recommend using an antenna matching network which will allow the LK500ZA to work into a 50 Ohm resistive load for maximum power transfer into the antenna.

CAUTION

NEVER ATTEMPT TO OPERATE THE LK500ZA WITHOUT FIRST CONNECTING IT TO AN ANTENNA OR 50 OHM DUMMY LOAD OF SUFFICIENT POWER HANDLING CAPACITY OR SERIOUS DAMAGE MAY RESULT.

Ground Requirements. The LK500ZA should be attached to a good earth ground through as short and as large a ground strap as possible for best results. A ground post is provided on the rear of the LK500ZA chassis for this purpose. It is always a good idea to connect the chassis of all associated equipment together and ground them at one point to avoid ground loops. We recommend that all of the equipment in your station be connected together and grounded at the Antenna Tuner.

TUNING PROCEDURE

WARNING

THIS UNIT IS SHIPPED READY FOR 234 VAC OPERATION. IF YOUR APPLICATION REQUIRES RUNNING THE LK500ZA ON 117 VAC, SEE "POWER REQUIREMENTS" UNDER INSTALLATION INSTRUCTIONS.

1. Set the Bandswitch to the desired band.
2. Set the Load Control on number shown on tuning chart.
3. Set the Tune Control on number shown on tuning chart.
4. Set the On/Ac Control to ON.
5. Set the Xmit/Stby Control to XMIT.

6. Set Meter switch to grid current. (This is read on Plate/Grid Current Meter.

BAND	FREQ-MHz	LOAD	PLATE
160M	1.800	100	50
	1.900	100	25
80M	3.600	85	75
	3.900	50	65
40M	7.100	85	45
	7.200	75	45
20M	14.100	60	25
	14.200	50	25
15M	21.100	40	20
	21.200	40	20
10M*	28.200	40	17
	28.800	40	15

* EXPORT ONLY

7. Insert a small amount of exciter drive until the plate current begins to rise to approximately 300mA.

8. Rotate the Tune Control for maximum output on your station wattmeter.

9. Go between Tune and Load for maximum output.
1 KW input (Plate Voltage x Plate Current = Power Input)
Example: Plate Current = 400mA
Plate Voltage = 2500 V DC
.4 x 2500 V = 1000 Watts Input

10. Increase drive power. Repeat steps 8 through 10 until you obtain desired output.

11. During tune up alternately monitor Grid and Plate Current.

12. Grid current can be reduced by slightly decreasing the Load control.

13. ALWAYS TUNE FOR MAXIMUM OUTPUT !

WARNING

CURRENT LIMITATIONS FOR NORMAL OPERATION:

Plate Current. . . not to exceed 900 MA.
Grid Current . . . under tune up, RTTY, or SSTV, never to exceed 300 mA.
. . . on SSB voice peaks should average less than 200mA while operating.
. . . on CW between 100 and 250mA, depending on sending speed.

SERVICE DATA

CAUTION

EXTREME CARE MUST BE TAKEN WHENEVER MAKING ANY ADJUSTMENTS INSIDE THE LK500ZA.

Removing Top Cover. After completely disconnecting the LK500ZA from power wait 30 minutes so all electrolytic capacitors have discharged through their bleeding resistors. The top cover can then be safely removed by taking out the top and side row of screws.

Cleaning Amplifier Compartment. Since the Amplifier compartment is forced-air cooled, it will collect particles of dust which must be removed periodically. The frequency of cleaning will be governed by how many hours the LK500ZA is operated, and by how clean its environment is. When the blower blade accumulates a large amount of dust, the Amplifier should be cleaned. The best way to clean the LK500ZA is to remove the top cover and blow the dust out with compressed air. If compressed air is not available, a soft-bristled one-inch paint brush can be used to brush the Amplifier clean.

WARNING

DO NOT BLOW AIR DIRECTLY INTO THE FAN BLADES. USE A BRUSH IN CLEANING THE BLADES OF THE FAN.

Tube Replacement. If it becomes necessary to replace the tubes in the LK500ZA the same brand should be used. A new tube kit is available from Amp Supply Co.

Trouble Shooting. Careful consideration has been given to the design of the Lk500ZA to keep maintenance problems to a minimum. However, it is possible that some problem will arise which cannot be cured by tube substitution. If this occurs, we suggest that you contact our customer service department, describing your problem in detail. Include full information concerning external connections, control settings, associated equipment, antenna, being sure to indicate the serial number of the LK500ZA. Do not return equipment to the factory without prior authorization.

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PARTLIST.5ZA

LK500ZA PARTS LIST

DRAWING SYMBOL	DESCRIPTION
B1	BLOWER MOTOR
L1-14	.01 1 KV DISC
C22-25, C52-54	
C15	1000 UF 25 V ELECT.
C16-21	125 UF 500 V ELECT.
C26,33	1000 PF 5 KV
C28	.001 7.5 KV DISC.
C29	250 PF VARIABLE
C30,31,35	200 PF 5 KV
C32	800 PF VARIABLE
C34	500 PF 5 KV
C36-45	INPUT TRIMMERS
C46-51	FACTORY SELECTED INPUT PADDERS
D1-2	IN4007 OR EQUIVALENT
D3	IN3308
D4-12	IN5408
FU1,FU2	15 A (220 V) 25 A (110 V)
J1,2	SO239 CONNECTOR
J3	RCA PHONO CONNECTOR
K1	3PDT 12 V RELAY
K2-6	DPST 12 V RELAY
L1	TANK COIL (14 MHZ-30 MHZ)
L2	TANK COIL (1.8-14 MHZ)
L3-7	FACTORY SELECTED INPUT COILS
M1	0-1, 5 A METER
M2	0-3 KV, 0-300 MA METER
R1,R5	100 K 2 W
R2,R3	FACTORY SELECTER METER SHUNT
R4	250 OHM 10 W
R6-11	200 K 4 W
R12,13	FACTORY SELECTED METER RESISTOR
RFC 1	30 AMP BIFILAR FILAMENT CHOKE
RFC 2,3	PARASITIC CHOKE
RFC 4	PLATE CHOKE
RFC 5	2.5 MH CHOKE
S1	SPDT ROTARY
S2,S3	SPST ROCKER
S4	BANDSWITCH
T1	5 V 30 A TRANSFORMER
T2	POWER TRANSFORMER
TS1	TERMINAL STRIP FOR 117/234 JUMPERS
V1,V2	3-500Z TUBES

PARTLIST.5ZA

LK500ZA PARTS LIST

DRAWING SYMBOL	DESCRIPTION
B1	BLOWER MOTOR
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C15	1000 UF 25 V ELECT.
C16-21	125 UF 500 V ELECT.
C26,33	1000 PF 5 KV
C28	.001 7.5 KV DISC.
C29	250 PF VARIABLE
C30,31,35	200 PF 5 KV
C32	800 PF VARIABLE
C34	500 PF 5 KV
C36-45	INPUT TRIMMERS
C46-51	FACTORY SELECTED INPUT PADDERS
D1-2	IN4007 OR EQUIVALENT
D3	IN3308
D4-12	IN5408
FU1,FU2	15 A (220 V) 25 A (110 V)
J1,2	SO239 CONNECTOR
J3	RCA PHONO CONNECTOR
K1	3PDT 12 V RELAY
K2-6	DPST 12 V RELAY
L1	TANK COIL (14 MHZ-30 MHZ)
L2	TANK COIL (1.8-14 MHZ)
L3-7	FACTORY SELECTED INPUT COILS
M1	0-1, 5 A METER
M2	0-3 KV, 0-300 MA METER
R1,R5	100 K 2 W
R2,R3	FACTORY SELECTER METER SHUNT
R4	250 OHM 10 W
R6-11	200 K 4 W
R12,13	FACTORY SELECTED METER RESISTOR
RFC 1	30 AMP BIFILAR FILAMENT CHOKE
RFC 2,3	PARASITIC CHOKE
RFC 4	PLATE CHOKE
RFC 5	2.5 MH CHOKE
S1	SPDT ROTARY
S2,S3	SPST ROCKER
S4	BANDSWITCH
T1	5 V 30 A TRANSFORMER
T2	POWER TRANSFORMER
TS1	TERMINAL STRIP FOR 117/234 JUMPERS
V1,V2	3-500Z TUBES

Amp Supply Co.

LK-500 NTB

AMP SUPPLY CO.

LK 400/500 SERIES
LINEAR AMPLIFIERS

OWNER'S MANUAL

Amp Supply Co.
6307 Chapel Hill Rd.
Raleigh, NC 27607

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SECTION 1
INTRODUCTION

1.1 Product Description

The Amp Supply LK 400/500 series linear power amplifiers are compact 160-15 meter MF/HF amplifiers of modern design. The series provides the amateur operator with a choice of power output levels and features consistent with their specific operating requirements. Each LK 400/500 series amplifier uses the powerful 3-500Z triode tube(s) in a grounded grid configuration Class AB_2. The LK 400/500 series amplifiers are high performance pieces of equipment and are engineered conservatively with American components and ingenuity.

Every LK 400/500 series MF/HF linear amplifier is field tested at its specified power input level and duty cycle and should require a minimum of maintenance through years of operation. Additionally, each LK 400/500 series amplifier will operate many MARS frequencies without modification (see MARS expanded coverage chart). A quiet, efficient cooling system maintains the RF deck and power supply chamber temperature ensuring long service life. All LK 500 series linear amplifiers feature the new ALO (Automatic Lock Out) circuit which senses unacceptable plate/grid currents and voltages or improper amplifier tuning and stops amplifier operation.

Tuning the amplifier is a simple procedure, since each unit is designed for long-term stability in virtually any operating situation. Tuned input and standard relay switching circuitry makes the LK 400/500 series compatible with any available solid state or tube transceiver or transmitter. Despite their straight-forward design and minimal user required adjustment, the LK 400/500 series linear amplifiers are sophisticated electronic instruments. Therefore, if the unit is operated outside the parameters outlined in this owner's manual, damage may result. Please read this manual carefully before putting your new Amp Supply LK 400/500 series linear amplifier on the air.

The following definitions are applicable to this manual. These definitions must be followed explicitly. See Appendix A for a complete list of cautions and warnings.

WARNING
HAZARD PRESENTS PERSONAL INJURY OR DEATH

CAUTION
EQUIPMENT DAMAGE MAY OCCUR BUT NOT PERSONAL INJURY

NOTE
Proper performance of the amplifier cannot be ensured if disregarded

1.2 Specifications

The following subsections describe the LK 400/500 series amplifiers specifications.

1.2.1 Common Specifications

Physical dimensions and functional characteristics of the LK 400/500 series amplifiers are contained in this listing. Specifications are subject to change without notice or obligation.

DIMENSIONS:	9" H x 15" W x 15" D
FREQUENCY COVERAGE:	Ham Bands 160 through 15 meters*. Non-amateur frequencies between 1.8-4.0 and 6.5-24 MHz may be covered by adjustment made by a qualified electronics technician.
CIRCUIT TYPE:	Class AB$_2$ grounded grid.
EMISSION TYPES:	RTTY, SSTV, AM, CW, SSB
INPUT IMPEDANCE:	50 Ohms - tuned input for each band

OUTPUT IMPEDANCE:	Adjustable PI-network matches 50 ohm load with SWR not to exceed 2:1
INTERMODULATION DISTORTION PRODUCTS:	In excess of -33 dB below fundamental
HARMONIC SURPRESSION:	In excess of -50 dB below fundamental
FREQUENCY OPTIONS:	See Appendix A for MARS expanded frequency coverage
AVAILABLE OPTIONS:	- AT 3000 matching 3KW tuner - Ten meter mod kit for licensed U.S. Amateurs - Export model, factory built 10 meter board - Plug and Play Cable (specify your radio) - LK500 series only: - no QSK - no-tune version - PAC-5: Utilizing a Peter Dahl 1.75 AMP CCS Hypersil transformer which allows continuous duty, all modes, allows 24 hours a day operation (standard with LK 550). - LK 450: ALO circuit

1.2.2 Unique Specifications

LK450

TUBE COMPLEMENT:	(1) 3-500Z Triode
TYPICAL OUTPUT:	1000 Watts SSB, 800 Watts CW, 600 Watts SSTV, RTTY and 300 Watts AM
PLATE VOLTAGE:	RTTY, SSTV, AM, CW, SSB, 3.2 KV DC no load
DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	85 Watts PEP SSB 80 Watts CW, 50 Watts SSTV RTTY
DUTY CYCLE:	Amateur continuous duty on all modes at specified output
POWER REQUIREMENTS:	117 Volts 50/60 Hz @ 20 Amps or 234 Volts 50/60 Hz @ 10 Amps, unit factory wired for 117V
WEIGHT:	Shipping Net 46 lbs ; operating net 41 lbs Shipped in two boxes

LK500 Series

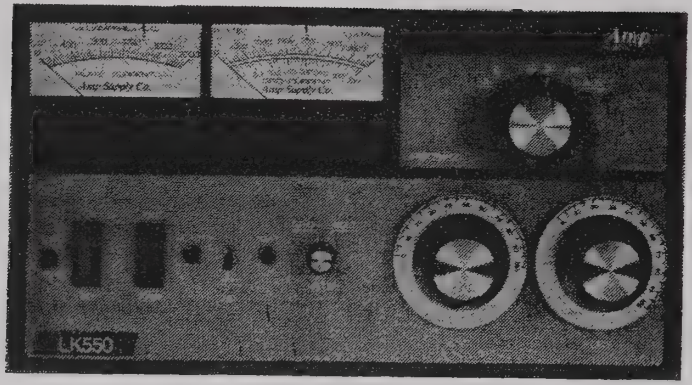
TUBE COMPLEMENT:	(2) 3-500Z Triodes
TYPICAL OUTPUT:	1500 Watts on SSB, 1200 Watts on CW and 900 Watts on SSTV, RTTY and 600 Watts AM
PLATE VOLTAGE:	RTTY, SSTV AM, CW, SSB 3.2 KV DC no load
DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	100 Watts PEP SSB 100 Watts CW, 60 Watts SSTV, RTTY
DUTY CYCLE:	Amateur continuous duty in all modes at specified output.

POWER REQUIREMENT:	117 Volts 50/60 25 Amps or 234 Volts 50/60 Hz 12.5 Amps
WEIGHT:	Shipping net 59 lbs, 2 boxes; operating net 54 lbs
AUTOMATIC LOCK OUT:	Safely interrupts amplifier operation when unacceptable antenna currents and/or voltages are encountered, or when the amplifier is improperly tuned
POWER TRANSFORMER:	1.2 Amp ICAS Peter Dahl Hypersil.

LK550 Series

TUBE COMPLEMENT:	(3) 3-500Z triodes
TYPICAL OUTPUT:	1500 Watts SSB, CW, SSTV, RTTY, 900 Watts AM
PLATE VOLTAGE:	RTTY, SSTV, AM, CW, SSB 3.2 KV DC no load
DRIVE REQUIREMENTS FOR TYPICAL OUTPUT:	100 Watts all modes
DUTY CYCLE:	Continuous duty all modes at specified output, 24 hours a day
POWER REQUIREMENTS:	234 Volts 50/60 Hz 25 Amps only
WEIGHT:	Shipping Net 110 lbs; 3 boxes Operating Net 103 lbs; RF Deck 38 lbs; transformer 65 lbs; tubes 7 lbs.
AUTOMATIC LOCK OUT:	Safely interrupts amplifier operation when unacceptable antenna currents and/or voltages are encountered, or when the amplifier is improperly tuned.
POWER TRANSFORMER:	1.75 Amp CCS Peter Dahl Hypersil in separate enclosure.

1.3 Front Panel Features



AC-ON Illuminated ROCKER SWITCH - Turns power on and off.

XMIT-STBY ROCKER SWITCH - Turns the amp from Standby to Operate mode. Operate mode enables a green LED.

BAND-SWITCH - Selects desired band.

HI/LO AIR SWITCH - Provides higher volume cooling air for extended operation.

XMIT - Red LED

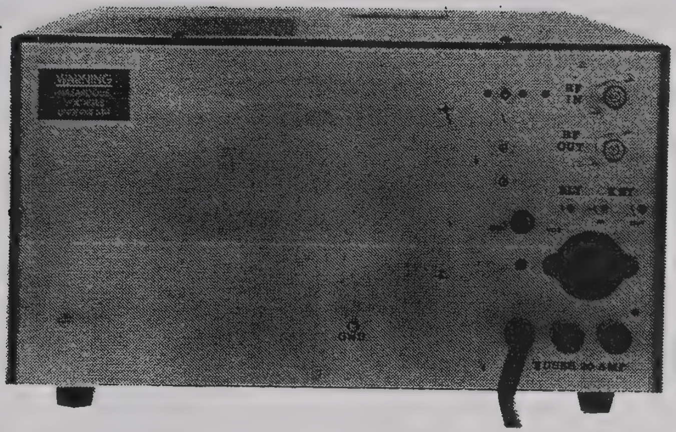
PLATE AND LOAD KNOBS - Tuning adjusts Pi-Network capacitors in tank circuit for proper resonance and loading on all bands.

PLATE CURRENT METER - Continuously monitors plate current of 3-500Z tube(s).

GRID-VOLT METER - By use of the meter switch can monitor plate volts (0-3500 V) or grid current (0-350 mA).

ALO LED - Enabled when unacceptable plate/grid currents and/or voltages are encountered or improper amplifier tuning exists .

1.4 Rear Apron Features



RF-IN - For connecting to exciter RF output to the amplifier.

RF-OUT - For connecting the LK400/500 series linear amplifier to an antenna.

RLY - For connecting to exciter auxiliary jack to activate T/R Relay in the LK400/500 series amplifiers.

KEY IN - QSK ONLY - station key, must be a bug, hand key or a keyer

KEY OUT - QSK ONLY - hooks to the KEY-IN jack on a QSK transceiver.

QSK VOX SWITCH - place in the QSK position when operating QSK CW.

GROUND LUG - Attach to a good earth ground.

FUSES - 2 holders provided to protect each leg of the AC line.

SERIAL NUMBER - Located on the model type identification sticker.

AC LINE CORD - Connect to proper power requirements only.

PAC-5 PLUG - LK550/LK500 w/optional PAC-5 only. Connects the PAC-5 power transformer to LK550/LK500.

CAUTION

NEVER REMOVE /INSERT PLUG WHEN UNIT IS ON OR WHEN THE RF DECK AC LINE CORD IS CONNECTED TO AN AC POWER SOURCE

SECTION 2
INSTALLATION

2.1 Introduction

This section describes the unpacking and installation procedures for the LK 400/500 series amplifiers.

WARNING

MAKE NO ATTEMPT TO PUT THE AMPLIFIER IN SERVICE OUTSIDE OF THE CABINET—CONTACT WITH VOLTAGE IN THE AMPLIFIER CAN BE FATAL!!!

2.2 Unpacking

All shipping containers have been specially designed to protect their contents and special care has been taken to prevent damage under normal shipping conditions. Mishandling should be evident upon inspection of the shipping container. If damage is found after visual inspection, take care not to destroy the evidence. If necessary, document the damage with photographs and contact the transport carrier immediately.

Carefully remove your new LK400/500 series linear amplifier from its packing carton, and examine it closely for signs of shipping damage. It is recommended to save all original packing cartons to protect your amplifier from damage should you wish to store it or ship it for after-sales service.

2.3 Warranty Card

Fill out the enclosed warranty registration card and return to Amp Supply within 10 days of original purchase. Keep your original sales slip with the packing cartons should you ever need it for reference.

2.4 Installation

The following subsections describe the installation procedures for the LK 400/500 series amplifiers.

2.4.1 Tube Installation

CAUTION

ENSURE TUBES ARE INSTALLED PRIOR TO
APPLYING POWER TO THE AMPLIFIER

Carefully remove the tubes from their boxes. Carefully move the parasitic chokes in the tube compartment out of the way and install tubes. When securing the plate cap(s), take care not to overtighten screws or tube(s) may be damaged. Remove packing from under the tuned input board.

2.5 Amplifier Placement

In general, the location of your new amplifier is not critical. However, certain precautions must be taken to ensure optimum performance. Avoid extremely hot locations such as near radiators or other heating units. Keep the top of the amplifier case clear of books, papers, or other equipment to protect against overheating. Do not place the amplifiers closer than 2-1/2 inches from a wall.

CAUTION

OBSTRUCTION OF THE SIDES OF THE AMPLIFIER CASE
AND THE BLOWER AIR INLET MAY RESULT IN
AMPLIFIER TUBE(S) OVERHEATING

2.6 Power Requirements

Refer to your amplifier series unique specifications for proper power requirements and Figure 2.6.1 for AC line hook-up.

WARNING

NEVER OPERATE ANY AMPLIFIER
USING AN EXTENSION CORD

The LK400/500 series is shipped from the factory with jumpers connected to operate on 234 VAC (except LK 450). It is highly recommended that your

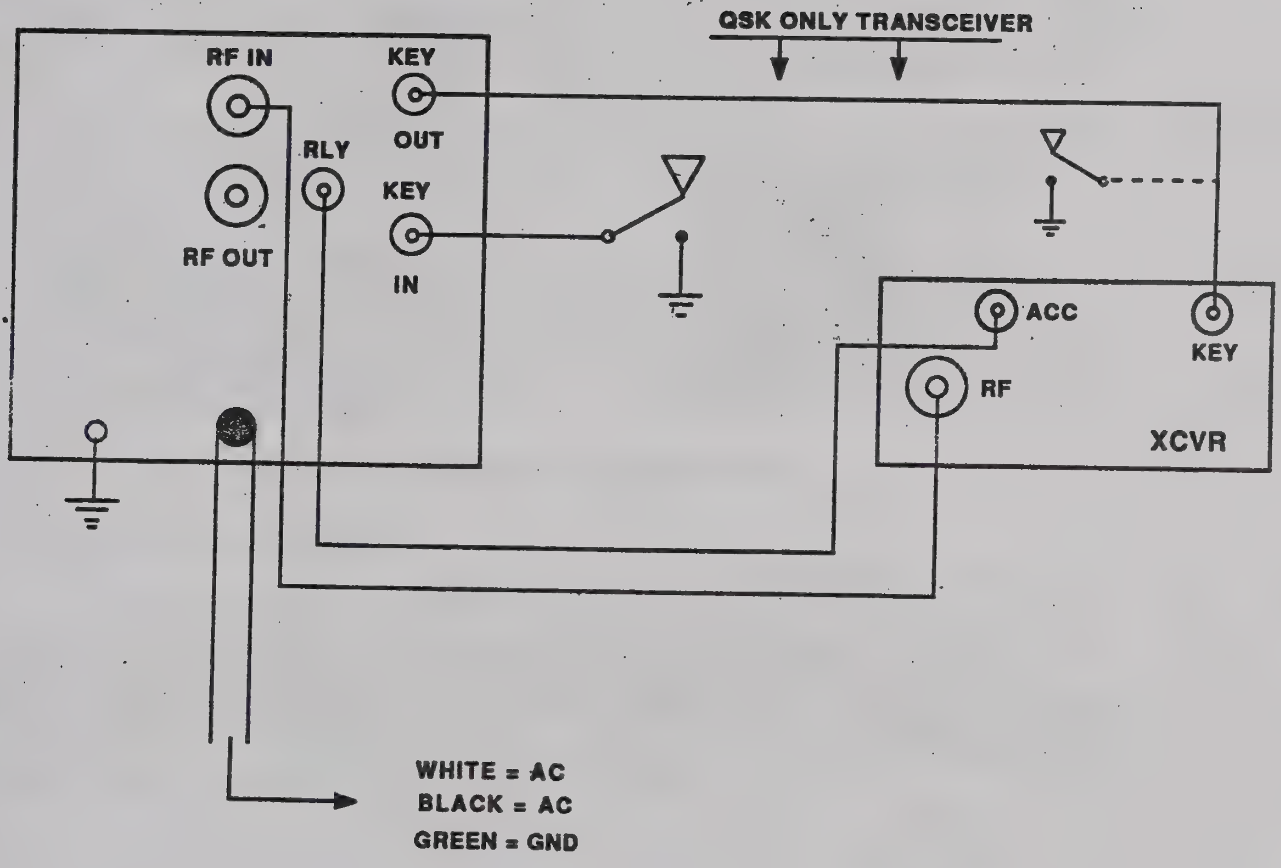


FIGURE 2.6.1 AC Line Hook-Up

amplifier be operated from its own 234 V - 20 A (or greater) circuit. If a 117 V circuit is all that is available, it should be fused for 30 A with circuit conductors not less than #10. No other equipment should be operated from this 117V circuit. A jumper plug is provided with the amplifier to convert to 117V service.

WARNING

**COMPLETELY REMOVE POWER FROM YOUR AMPLIFIER
AND ALLOW 30 MINUTES FOR THE HIGH VOLTAGE CAPACITORS
TO DISCHARGE THROUGH BLEEDER RESISTORS
BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS
ON BACK OF AMPLIFIER.**

Figures 2.6.2 illustrates the jumper connection on the Power Distribution Board, located in the left rear corner of the chassis, for either 117V and 234V operation. The jumper must be inserted as shown or severe damage to your amplifier components may result. Remove existing jumper before installing the new one.

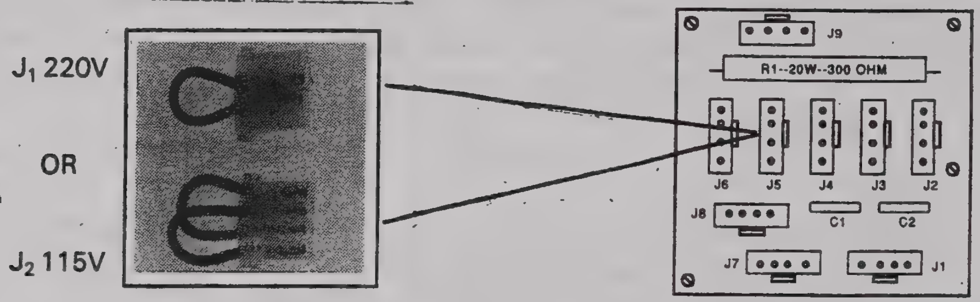


Figure 2.6.2 Jumper Plug Placement

2.7 Amplifier Installation

After the tubes have been installed, install the top cover and secure with a few screws to finger tight. Connect your amplifier to your power source. Set the amplifier controls as follows:

AC/ON - OFF
XMIT/STBY - STBY
METER - VOLTS

Turn the unit on. Plate voltage should read between 3000-3300 Volts DC. Turn the unit off.

2.8 Cable Installation (See Figure 2.8.1)

a. Using a 6 ft. length, connect a 52-Ohm coaxial cable (RG-8U or equivalent) between your transmitter's RF OUTPUT to the LK400/500 series RF INPUT connector.

b. Using another short length of coaxial cable, (RG-8U or equivalent,) connect the LK400/500 series RF OUTPUT connector to a suitable wattmeter.

c. Using the necessary length of coaxial cable, (RG-8U or equivalent) connect the wattmeter output to your antenna system.

d. Select an appropriate length of shielded cable and install an RCA connector on one end and the appropriate connector for your transceiver at the other end.

e. Install the shielded cable between your transmitter accessory contacts on the transmitter rear apron and the RLY plug on the rear apron of your LK400/500 series linear amplifier. These should be normally open contacts capable of carrying 100 mA, which close when you desire to transmit.

f. See your exciter operators manual for details.

2.9 Ground Requirements

For best results your amplifier should be attached to a good earth ground by as short in length, and as large as possible, ground strap. A ground post is provided on the rear apron for this purpose. It is always a good idea to connect the chassis of all associated equipment together and ground them at one point to avoid ground loops. We recommend that all of the equipment in your station be connected together and grounded at the antenna tuner.

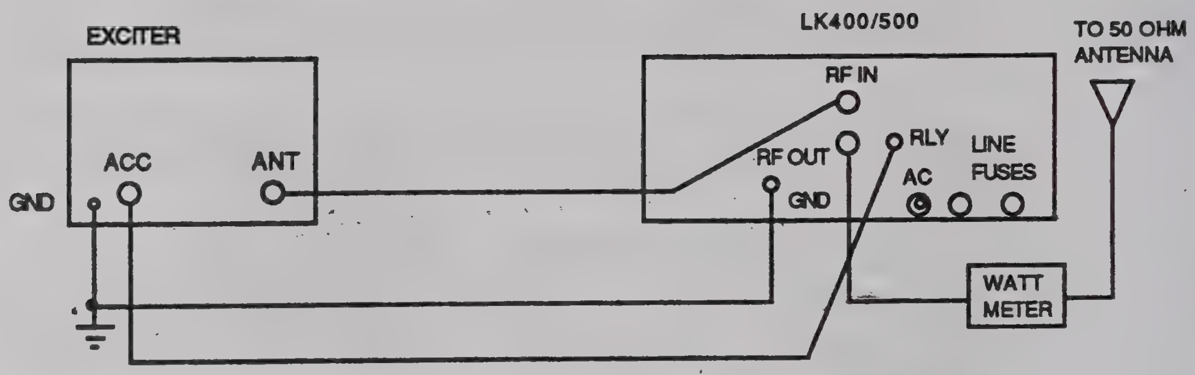


Figure 2.8.1 Cable Installation

NOTE

If QSK is available and desired, refer to Figure 2.6.1 to connect the cables. Make cables as specified in step 2.8d Cable Installation.

2.10 Antenna Requirements

Your LK400/500 series linear amplifier has been designed for use with antennas resonant at the operating frequency and having approximate impedances within the limits of 30 to 75 Ohms.

The nominal output impedance of the amplifier is 50 Ohms and the SWR of this load should never exceed 2:1. Although there are many types of antennas which will meet these requirements, the simplest is a one-half (1/2) wave dipole center fed with 52 Ohm coax. For a detailed discussion on antennas, we suggest referring to an appropriate antenna book.

Most practical antennas exhibit an SWR range exceeding 2:1 at the edge of your favorite Amateur band. For this reason we recommend using an antenna matching network which will allow your LK400/500 series linear amplifier to work into a 50 Ohm resistive load for maximum power transfer into the antenna. The new AT3000 by Amp Supply Co. is a perfect companion tuner for the LK400/500 series of amplifiers.

CAUTION

NEVER ATTEMPT TO OPERATE THE LK400/500 SERIES WITHOUT FIRST CONNECTING THE UNIT TO AN ANTENNA OR 50 OHM DUMMY LOAD OF SUFFICIENT POWER HANDLING CAPACITY OR SERIOUS DAMAGE MAY RESULT

This completes installation of your new LK400/500 series linear amplifier.

SECTION 3
TUNING

3.1 Tuning Procedure

This section describes the tuning procedure for the LK400/500 series linear amplifiers. Follow all steps carefully to insure optimum performance of your amplifier. Read all tuning steps before actually tuning your amplifier.

CAUTION

THIS UNIT IS SHIPPED READY FOR 234 VAC OPERATION (EXCEPT LK450). REFER TO INSTALLATION INSTRUCTIONS FOR 117V OPERATION.

1. Set the BANDSWITCH to the desired band. If your amplifier is model LK450/500/550NTC, go to step 4, otherwise proceed on to step 2.
2. Set the LOAD control on number shown on tuning chart.
3. Set the TUNE control on number shown on tuning chart.
4. Set the ON/AC control to ON.
5. Select the correct antenna for the band selected. Insure antenna VSWR is acceptable before proceeding.
6. Set the XMIT/STBY control to XMIT. If your amplifier is model LK500NTC, go to step 7, otherwise proceed to step 8. The green LED indicates the amplifier is in the Ready To Operate mode.
7. Set Meter switch to grid current (this is read on Plate Voltage/Grid Current Meter).
8. Insert a small amount of exciter drive until the plate current begins to rise to approximately 400mA. If your amplifier is model LK450/500/550NTC, go to step 16, otherwise proceed to step 9.

9. Rotate the TUNE control for maximum output on your station watt meter.

10. Alternate between TUNE and LOAD for maximum output.
1 KW input (Plate Voltage x Plate Current = Power Input)
Example: Plate Current = 400mA
Plate Voltage = 2500 VDC
.4 x 2500 V = 1000 Watts Input

11. Increase drive power. Repeat steps 8 through 10 until you obtain maximum power output.

12. During tune up alternately monitor Grid and Plate Current.

13. Grid current can be reduced by slightly decreasing the Load control. Turn control to right, clockwise.

14. ALWAYS TUNE FOR MAXIMUM OUTPUT!

15. Increase drive from the exciter until a further increase in exciter drive does not increase amplifier output power.

16. When your station watt meter indicates maximum amplifier power output, return the exiter to receive mode. Select the desired transmitter operating mode and you are ready to operate with your new amp.

Table 3-1
Tuning Charts (see enclosed charts)

LK450	BAND	LOAD	TUNE
	160	X	X
	80	X	X
	40	X	X
	20	X	X
	15	X	X
	10	-	-

LK550	BAND	LOAD	TUNE
	160	65	68
	80	52	90
	40	58	31
	20	44	22
	15	32	9
	10	-	-

LK500	BAND	LOAD	TUNE
	160	X	X
	80	X	X
	40	X	X
	20	X	X
	15	X	X
	10	-	-

CAUTION

OBSERVE CURRENT LIMITATIONS FOR NORMAL OPERATION

Plate Current . . . .not to exceed 950 MA. in full tune-up*
Grid Current . . . . under tune up, RTTY, or SSTV, never to exceed 350 mA.
. . . . on SSB voice peaks should average less than 250 mA while operating.
. . . . on CW between 100 and 250 mA, depending on sending speed.**
* LK550 will not exceed 1400 mA
** LK550 will exceed 400 mA

TUNE-UP NOTES

SECTION 4
AMPLIFIER CARE

4.1 Introduction

This section provides instructions on the care and cleaning of the LK 400/500 series amplifiers.

WARNING

EXTREME CARE MUST BE TAKEN WHENEVER MAKING ANY ADJUSTMENTS INSIDE ANY LINEAR AMPLIFIER

4.2 Cleaning Amplifier Compartment

After completely disconnecting your amplifier from the power source, wait 30 minutes so all electrolytic capacitors have discharged through their bleeder resistors. The top cover can then be safely removed by taking out the top and side row of screws.

Since the amplifier compartment is forced-air cooled, it will collect particles of dust which must be periodically removed. The frequency of cleaning will be governed by how many hours the amplifier is operated, and by operating environment cleanliness. When the blower blade accumulates a large amount of dust, the amplifier should be cleaned. The best way to clean the amplifier is to remove the top cover and blow the dust out with compressed air. If compressed air is not available, a soft-bristled one-inch paint brush can be used to brush the amplifier clean.

CAUTION

DO NOT BLOW AIR DIRECTLY INTO THE FAN BLADES.
USE A BRUSH IN CLEANING THE BLADES OF THE FAN

4.3 Tube Replacement

If it becomes necessary to replace the tubes in the amplifier the same brand should be used. A new tube kit is available from Amp Supply Co.

Table 4-1
Mars Expanded Frequency Chart

FREQUENCY	BANDSELECT	PLATE	LOAD
7.500	7.0	38	39
8.033	7.0	30	30
11.539	14.0	47	95
12.050	14.0	42	86
13.644	14.0	29	61
13.485	14.0	30	61
13.827	14.0	28	58
13.975	14.0	28	55
14.385	14.0	24	53
14.443	14.0	24	53
14.820	14.0	22	42
14.935	14.0	21	46
16.300	21.0	42	70
20.680	21.0	19	45
20.937	21.0	18	43
20.998	21.0	18	43
27.963*	AUX	15	30
27.975*	AUX	15	29

*NOTE: With 10 meters installed.

4.4 TroubleShooting

Careful consideration has been given to the design of the LK400/500 series to keep maintenance problems to a minimum. However, it is possible that some problem will arise which cannot be cured by tube substitution. If this occurs, a chart of frequent problems and typical cures has been included. Please refer to Table 4-1, trouble shooting guide. After checking all suggested remedies without any success, we suggest that you contact our Customer Service Department, to describe your problem in detail. Include full information concerning external connections, control settings, antenna and associated equipment. Be sure to indicate the serial number of your amplifier as specified on the rear apron. Do not return equipment to the factory without prior authorization.

4.5 FactoryService

Obtain a return authorization from the Customer Service Department. Amp Supply Co. will assume no responsibility if the transportation company refuses to pay a damage claim due to improper packing or lack of insurance. Remove the tubes prior to shipping and store the tubes in a separate carton. Do not return the tubes.

Table 4-2
TROUBLE SHOOTING CHART

SYMPTOM	CAUSE	REMEDY
Amplifier will not power up	Not connected to a live AC circuit	Insure amplifier is plugged into a live, appropriate power source
	Blown AC line fuse	Remove Amplifier from AC power source and Inspect and replace blow fuse with an identical type fuse. Connect Amplifier to AC power source. If fuse fails again contact Amp Supply Co.
Amplifier will not transmit	Stand by/operate switch in standby	Place switch in XMIT position (green LED should light)
	Relay control cable has open connection	Check for continuity center to center, shield to shield. Replace cable as necessary Re-do RCA phono plugs
	Very high VSWR	Normal operation for ALO equipped amplifiers Stops amplifier operation when high antenna currents and voltages are encountered. Ensure a resonant antenna is selected for the frequency being used

Table 4-2
TROUBLE SHOOTING CHART(CONT'D)

SYMPTOM	CAUSE	REMEDY
Amplifier will not transmit	Improper tuning	Normal operation for ALO equipped amplifiers, the ALO stops amplifier operation when the amplifier is mistuned. Place exciter in receiver mode. Consult the Tuning Chart applicable to your model type and preset the Load and Tune controls as specified then tune the amplifier as directed in the tuning procedure
	RF input/output cables reversed	Refer to figure 2.8.1 for details
	QSK control lines incorrect	Refer to figure 2.6.1 for correct connection
	Low/No Drive	Transmitter has no output Wrong band selected on transmitter
	QSK/VOX switch in QSK position	Place QSK/VOX switch on the rear apron to VOX position
	Low power output	Wrong band selected on amplifier Check Tune and Load presets on tuning chart and reset if necessary One or more 3-500Z tubes weak or defective

Table 4-2
TROUBLE SHOOTING CHART(CONT'D)

SYMPTOM	CASE	REMEDY
Amplifier always in transmit mode	Relay Control cable is shorted	Check center to shield for continuity: Re-do Relay Control cable
Amp will not load		Check Bandswitch setting Wrong antenna selected XMIT/STBY switch in STBY

LIMITED WARRANTY

Amp Supply Company warrants to the original purchaser that this product shall be free from defects in material (except tubes and RF output transistors) or workmanship for two (2) years from the date of original purchase.

During the warranty period, the Amp Supply Company or an authorized Amp Supply Company service facility will provide free of charge both parts (except tubes and RF output transistors) and labor necessary to correct defects in material or workmanship.

To obtain such warranty service, the original purchaser must:

(1) Complete and send in the Warranty Registration Card.

(2) Notify Amp Supply Company or its nearest authorized service facility, as soon as possible after discovery of a possible defect, of:

(a) The model number and serial number, if any;
(b) The identity of the seller and the approximate date of purchase;
(c) A detailed description of the problem, including details on the electrical connection in associated equipment and the list of such equipment.

(3) . Deliver the product to the Amp Supply Company or the nearest authorized service facility, or ship the same in its original container or equivalent, fully insured and shipping charges prepaid.

Correct maintenance, repair and use are important to obtain proper performance from this product. Therefore, carefully read the Instruction Manual. This warranty does not apply to any defect that Amp Supply Company determines is due to:

(1) Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and specifications of the original parts.

(2) Misuse, abuse, neglect or improper installation.

(3) Accidental or intentional damage. All implied warranties, if any, terminate one (1) year from the date of the original purchase.

The foregoing constitutes Amp Supply Company's entire obligation with respect to this product, and the original purchaser and any user or owner shall have no other claim for incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

This warranty gives specific legal rights and you may also have other rights which vary from state to state.

APPENDIX A
WARNINGS AND CAUTIONS

WARNINGS

MAKE NO ATTEMPT TO PUT THE AMPLIFIER IN SERVICE OUTSIDE OF THE CABINET. CONTACT WITH HIGH VOLTAGES FOUND IN THE AMPLIFIER CAN BE FATAL.

NEVER OPERATE ANY AMPLIFIER FROM AN EXTENSION CORD.

COMPLETELY REMOVE POWER FROM YOUR AMPLIFEIR AND ALLOW 30 MINUTES FOR THE HIGH VOLTAGE CAPACITORS TO DISCHARGE THROUGH BLEEDER RESISTORS BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS IN BACK OF AMPLIFIER.

CAUTIONS

NEVER REMOVE/INSERT PLUG WHEN UNIT IS ON OR WHEN THE RF DECK AC LINE CORD IS CONNECTED TO AN AC POWER SOURCE.

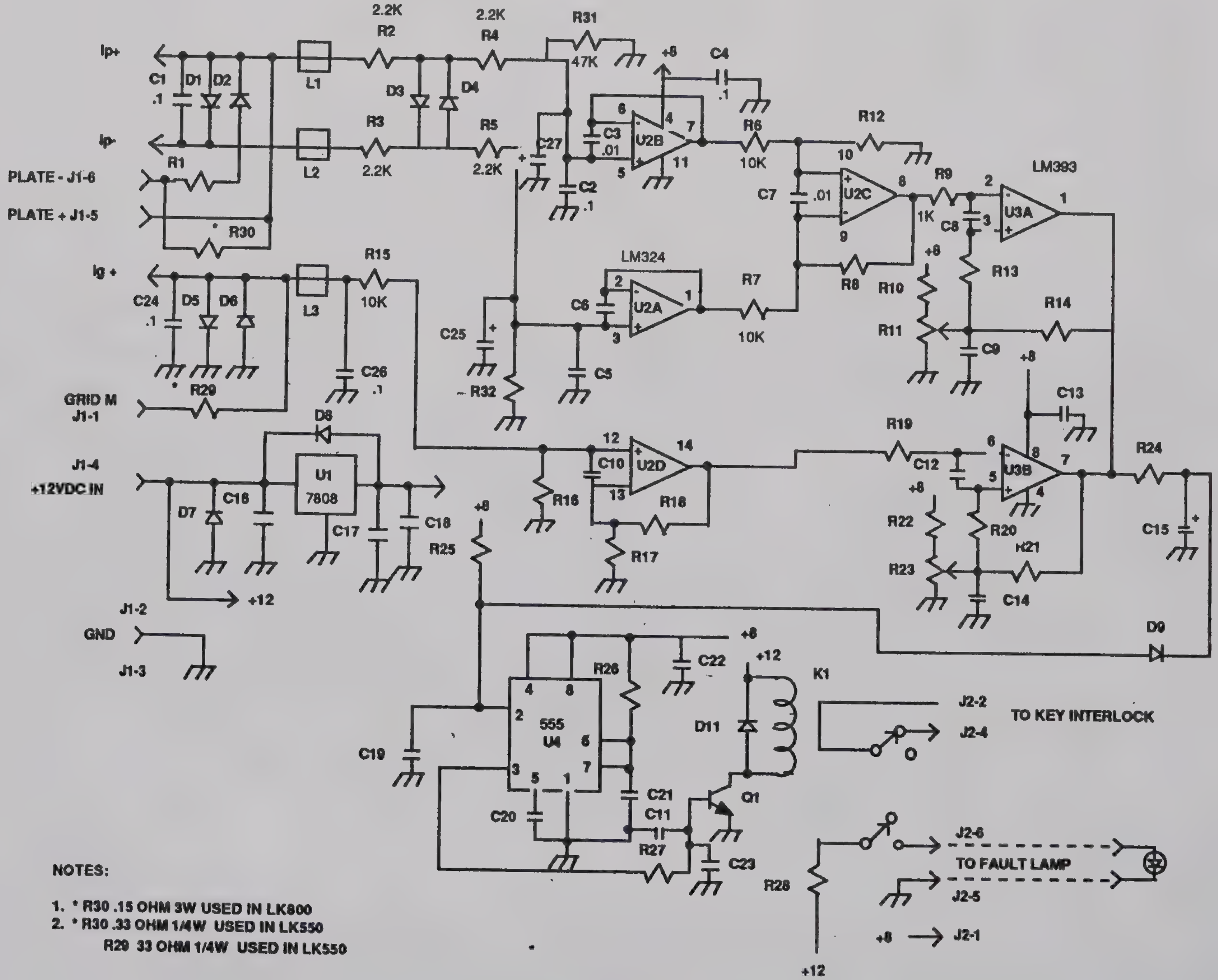
ENSURE TUBES ARE INSTALLED PRIOR TO APPLYING POWER TO THE AMPLIFIER.

OBSTRUCTION OF THE SIDES OF THE AMPLIFIER/CASE AND THE BLOWER AIR INLET MAY RESULT IN AMPLIFIER TUBE(S) OVERHEATING.

THE UNIT IS SHIPPED READY FOR 234VAC OPERATION. REFER TO INSTALLATION INSTRUCTIONS FOR 117V OPERATION.

OBSERVE CURRENT LIMITATIONS FOR NORMAL OPERATION.

DO NOT BLOW AIR DIRECTLY INTO FAN BLADES. USE A BRUSH FOR CLEANING THE BLADES.



NOTES:

1. * R30 .15 OHM 3W USED IN LK800
2. * R30 .33 OHM 1/4W USED IN LK550
   R29 33 OHM 1/4W USED IN LK550

FIGURE B-1 ALO METER BOARD

APPENDIX B
SCHEMATIC DIAGRAMS

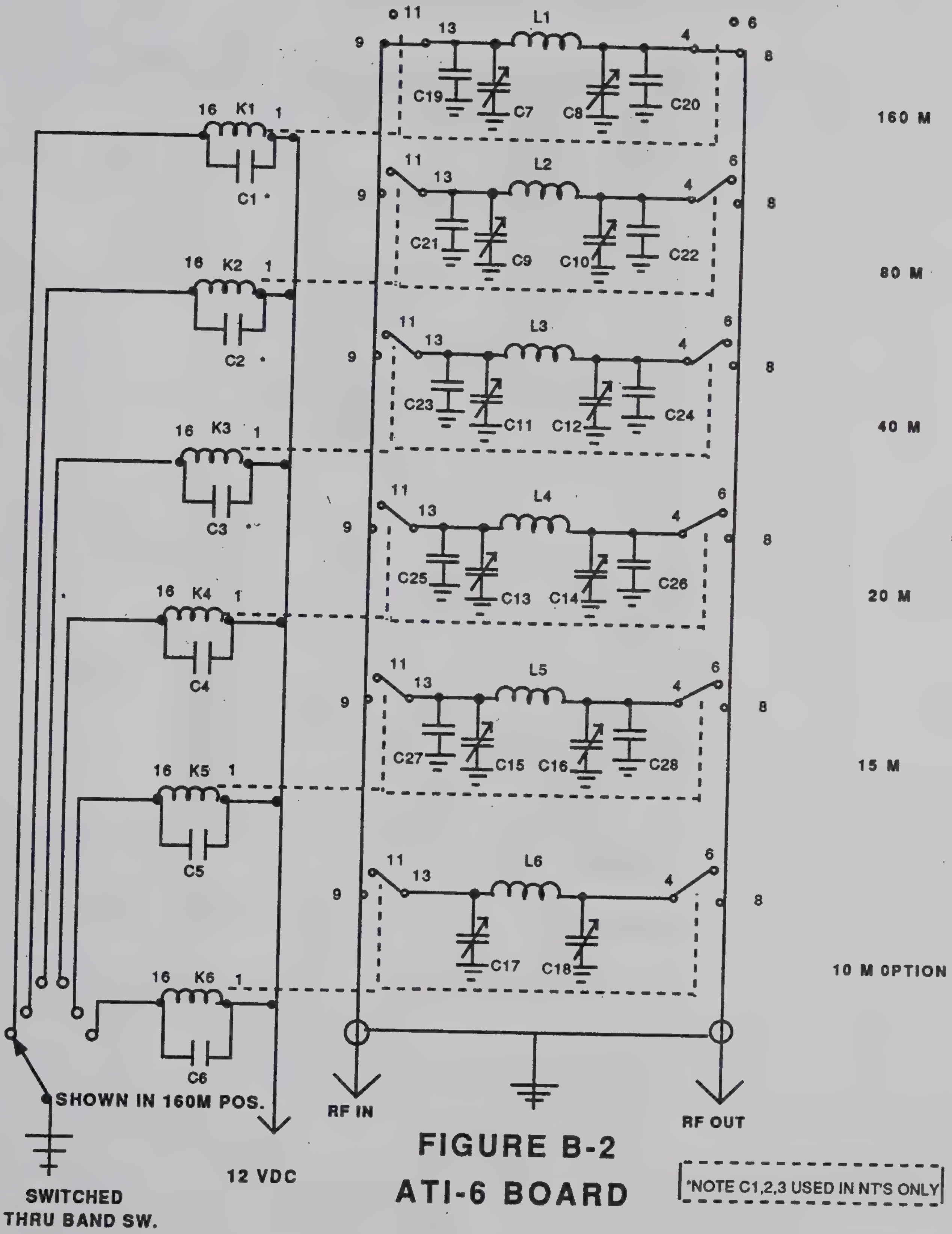
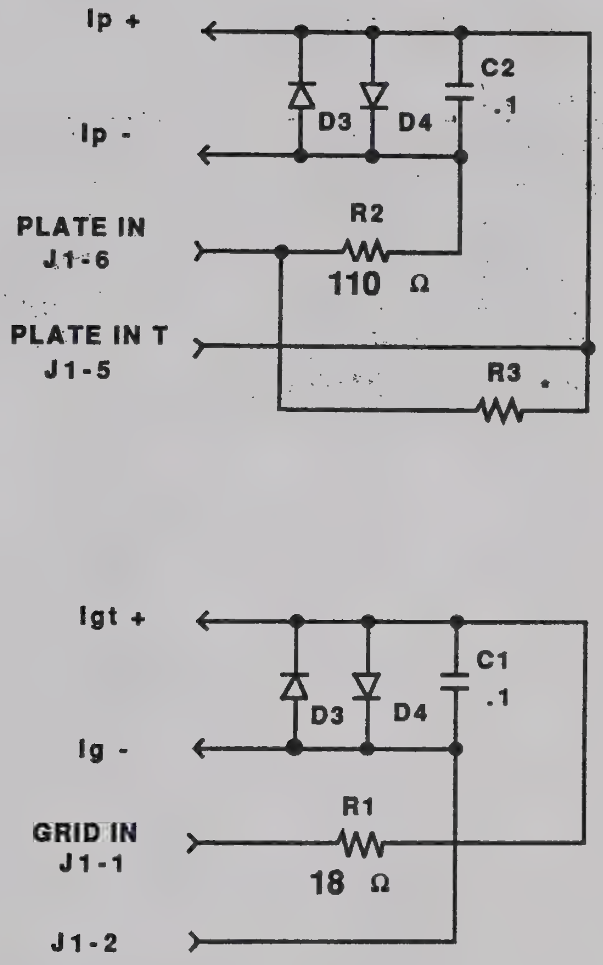


FIGURE B-2
ATI-6 BOARD

ALO METER BOARD BILL OF MATERIALS

QTY	DESCRIPTION	REF. DESIG.
2	6 PIN PC MOUNT MOLEX CONN.	J1,2
1	7808 8 VOLT REGULATOR IC	U1
1	LM324 OP AMP	U2
1	LM 393 COMPARATOR	U3
1	NE555 TIMER	U4
4	1N5408 DIODE	D1,2,5,6
5	1N4148 DIODE	D3,4,8,9,11
1	1N4742 DIODE	D7
1	2N2222A TRANSISTOR	Q1
1	AROMAT D2SE RELAY	K1
2	200 OHM 1/2 WATT POT VERT MT.	R11,23
3	HIGH MU FERRITE BEADS CN20	L1-3
1	110 OHM 1/4 W 5% RESISTOR	R1
4	2.2K OHM 1/4 W 5% RES	R2-5
9	10K OHM 1/4 W 5% RES	R6-8,12,12,15 17,20,25
3	1K OHM 1/4 W 5% RES	R9,19,28
1	15K OHM 1/4 W 5% RES	R10
2	1 MEG OHM 1/4 W 5% RES	R14,21
4	47K OHM 1/4 W 5% RES	R16,18,31,32
1	1.4K OHM 1/4 W 5% RES	R22
1	2K OHM 1/4 W 5% RES	R24
1	220K OHM 1/4 W 5% RES	R26
1	330 OHM 1/4 W 5% RES	R27
1	18 OHM 1/4 W 5% RES	R29
1	.15 OHM 3 WATT 5% RES	R30 *IN LK800 ONLY*
14	0.1uF 63 V CAP	C1,2,4,5,9,11,13,14 16,17,19,22,23,24
8	0.01uF 63 V CAP	C3,6,7,8,10,12,18,20
4	10uF 25V ELECTROLYTIC	C15,21,25,27

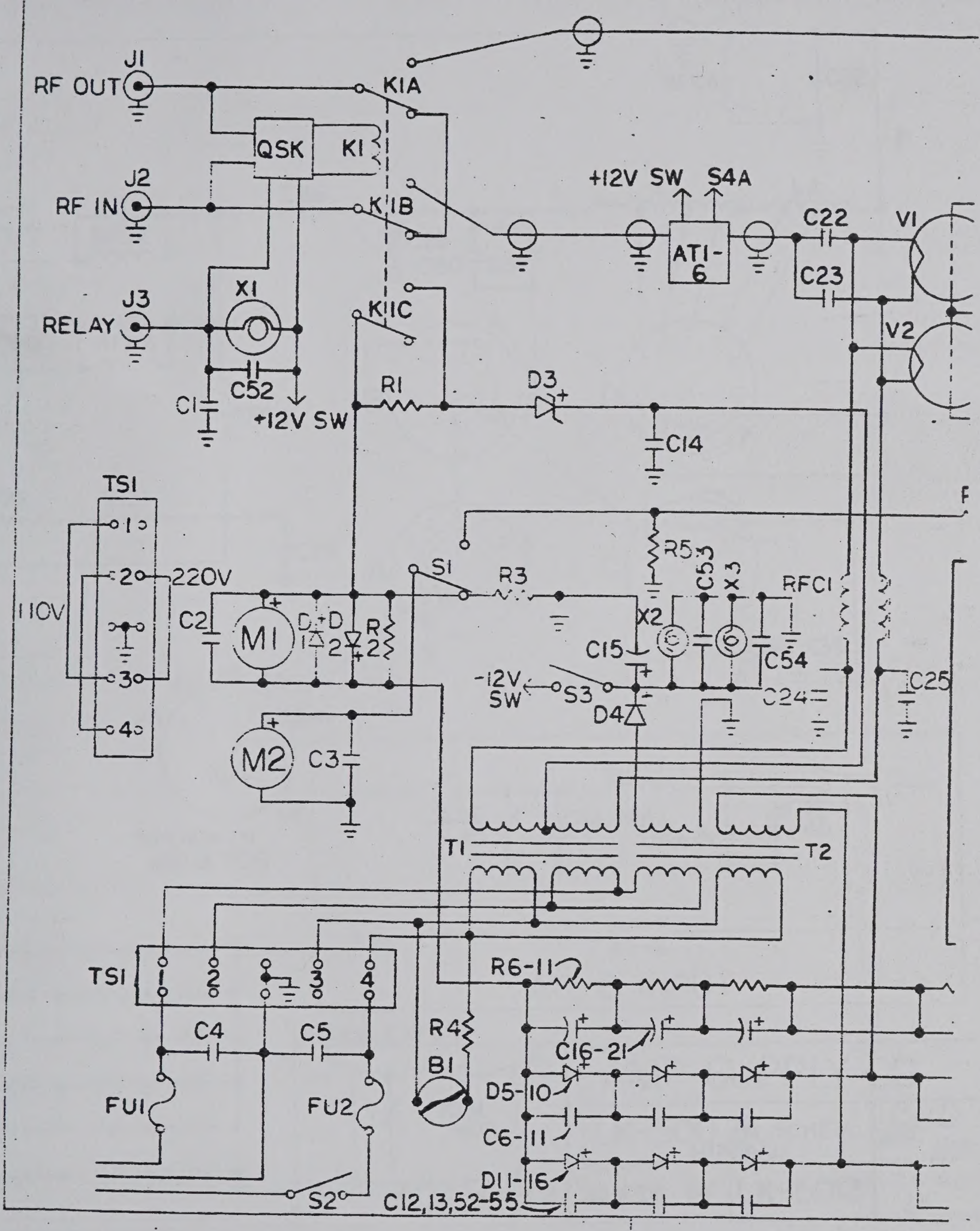


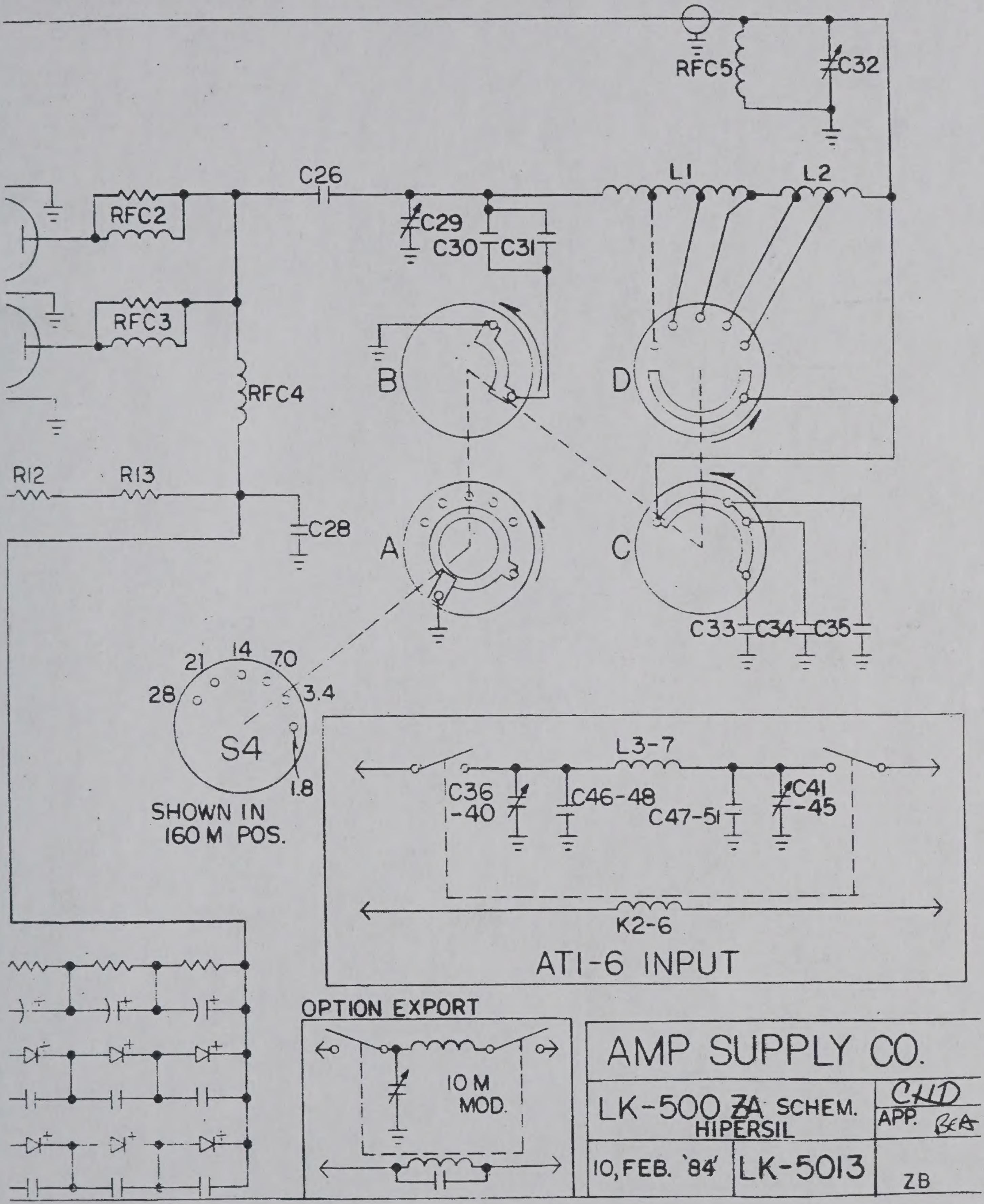
*R3 NORMALLY OPEN

FIGURE B-3 METER BOARD

ATI-6 BOARD BILL OF MATERIALS

QTY	DESCRIPTION	REF. DESG.
6	AROMAT D2SE RELAY	K1-6
6	TOROIDAL INDUCTORS	L1-6
6	0.01uF DISC CAP.	C1-6
8	VARIABLE CAP.(700'S)	C7-14
4	VARIABLE CAP.(600'S)	C15-18
10	CAPACITANCE OPTIMIZED FOR EACH MODEL AMPLIFIER	C19-28


J1
RF OUT
K1A
QSK
K1
J2
RF IN
K1B
+12V SW
S4A
AT1-6
C22
C23
V1
V2
J3
RELAY
X1
K1C
C52
C1
+12V SW
R1
D3
C14
TS1
1
2
220V
110V
3
4
C2
M1
D1
D2
R2
S1
R3
R5
C53
X3
RFC1
X2
C15
C54
-12V SW
S3
D4
C24
C25
M2
C3
T1
T2
TS1
1
2
3
4
R6-11
C4
C5
R4
C16-21
B1
D5-10
FU1
FU2
C6-11
D11-16
S2
C12,13,52-55



AMP SUPPLY CO.

LK-500 ZA SCHEM.
HIPERSIL

CHD
APP. BEA

10, FEB. '84'
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